

Dental

Abstracts

a selection of world dental literature

AMERICAN DENTAL ASSOCIATION

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**Abstracts
has
these
purposes**

- 1. To present a selection of pertinent literature representative of all points of view within the profession;*
- 2. To provide, by a few hours' reading each month, a survey of the significant advances being made by dentistry throughout the world, as reflected in current dental literature; and*
- 3. To supply enough data in each abstract so that the reader may determine whether he wishes to refer to the original article for more complete information.*

The abstracts are grouped in broad classifications. The specialist will learn from this periodical of work done in other fields as well as in his own. The general practitioner will be able to keep abreast of modern knowledge in the various specialties. Articles from which abstracts have been made are on file in the Library of the American Dental Association and may be borrowed by members of the Association. Requests for articles should be addressed to the Bureau of Library and Indexing Service, American Dental Association, 222 East Superior Street, Chicago 11, Illinois. Only three articles may be borrowed at one time, and they may not be kept longer than one week. No charge is made to Association members for this service.

Roentgenology

How to decrease x-radiation dosage

A. Porter S. Sweet. *D. Radiog. & Photog.* 30:52-55
No. 3, 1957

The amount of x-radiation to the patient can be reduced by three methods: (1) more filtration, (2) smaller diaphragm, and (3) faster films.

It has been customary to use a 1 mm. aluminum filter in the roentgen-ray beam of medical x-ray apparatus. Such a filter removes some of the softer rays which would be almost completely absorbed by the patient, thereby making no contribution to the roentgenographic image. This unused radiation, however, contributes to the radiation dosage received.

Seemann and Cleare (1955) found that total filtration could be increased to the equivalent of 2 mm. of aluminum without appreciable loss of quality in the roentgenogram. They also found that on the average the patient received only 57 per cent as much radiation after more filtration was added, even though slightly longer exposures were needed to produce roentgenograms of like density.

If a little additional filtration is good, why not more? There are two reasons:

1. More than 2 mm. filtration lowers the roentgenographic contrast noticeably, thus lessening the diagnostic quality of the roentgenograms. Therefore, if radiation is cut down by using too much filtration, the quality of the roentgenogram can be lowered so much that retakes will be necessary. This nullifies the advantage gained.

2. Filtration does not decrease the dosage in the immediate vicinity of the dental film, because the film must receive the same amount of radiation to yield a satisfactory roentgenogram. The added aluminum filter, in effect, is a substitute for the filtering action of the first few millimeters of flesh.

Every x-ray machine has a certain amount of built-in filtration, called "inherent filtration," and expressed in millimeters of aluminum. Sufficient aluminum can be added to make a total of 2 mm. If an x-ray machine has an inherent filtration of 1 mm. of aluminum, a disk of aluminum 1 mm. thick should be added to obtain the effective 2 mm.

To add the aluminum disk, the plastic cone is removed from the apparatus (Fig. 1), an aluminum filter is placed over the lead funnel and the tabs of the filter are bent down to hold it in place. Then the cone is replaced. Aluminum of commercial purity is suitable and is designated as 1,100 or as 2S. Aluminum filters are available from x-ray equipment dealers and from many dental dealers.

Radiation also can be reduced by using a smaller diaphragm. Average dental x-ray apparatus, made to be used at an 8-inch anode-film distance, produces a circle of radiation 4 inches in diameter at the film. If this circle of radiation is reduced from 4 to 3.5 inches, the radiation will be reduced 23.5 per cent.

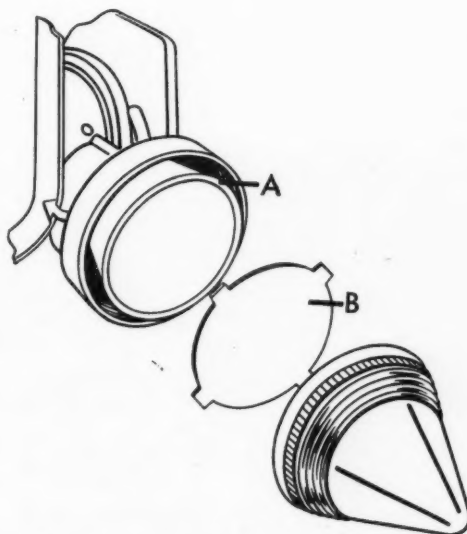


Figure 1 To add filtration, remove the plastic cone. This reveals the lead funnel (A). Over it place the aluminum filter (B), bend the tabs down and replace the cone

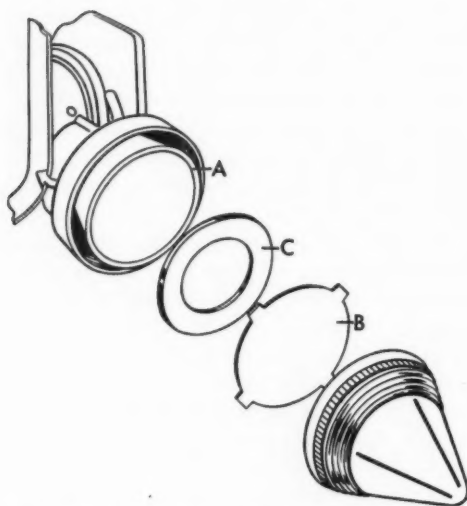


Figure 2 To add a smaller diaphragm, remove the plastic cone. Place the lead diaphragm (C) between the lead funnel (A) and the aluminum filter (B). Filter and smaller lead diaphragm can be added at the same time

The size of the cone of roentgen rays can be reduced by placing a lead washer, 2 mm. thick, in front of the lead funnel of the apparatus. If the outer end of the funnel in the x-ray apparatus measures 2 inches, a new lead washer placed over the opening should have a hole 1.75 inches in diameter. The aluminum filter previously mentioned and the lead washer can be added at the same time (Fig. 2).

The easiest way to decrease roentgen-ray radiation is to use faster film. Important advances have been made in the last two years. Kodak Periapical Radia-Tized Dental X-ray Film has been doubled in speed. Kodak Periapical Ultra-Speed Dental X-ray Film speed has been trebled. Using the faster film decreases radiation 67 per cent with the 16-inch technic, and 50 to 84 per cent with the 8-inch technic.

A new technic for dental roentgenography is available, based on 90 kvp. Ultra-Speed x-ray film is used with the apparatus set for 90 kvp. All exposures are made at a tenth of a second and the film is processed for a longer interval. With this technic a 14-film, full-mouth roentgenographic

examination can be made with an exposure of 1.4 seconds.

Eastman Kodak Company, Rochester, N.Y.

Investigation of light and heat treatment methods used in dental practice

(Experimentelle Untersuchungen verschiedener in der Zahnheilkunde verwendeter Bestrahlungsarten)

Ernst Lautenbach. *Schweizer.Mschr.Zahnk.* 67:495-508 June 1957

At the Dental Clinic and Polyclinic of the University of Bonn, Germany, the different methods of light and heat treatments (actinotherapy) used in dental practice were tested.

The effect and penetrability of infrared, ultra-violet and mixed rays, in short and long wave and in microwaves, were investigated as follows:

1. In laboratory tests, human fat layers, gelatin, agar plates, water and metal (inserted in animal fat) were irradiated.
2. In animal experiments with rabbits, the epidermis, subcutaneous connective tissue and muscular tissue were exposed to radiation.
3. In patients afflicted with oral abscesses, gingivitis, periodontal disease or osteomyelitis, the root canals and the maxillary sinuses were intraorally and extraorally irradiated.

All treatment methods tested proved to possess adequate surface action. Short-wave and microwave irradiation showed a great capacity of penetration into the deeper layers of tissue. The most satisfactory result in penetration of tissue was obtained with the microwave technic.

It can be concluded that the use of actinotherapy in dental practice is a highly valuable aid in treating diseased conditions in the oral cavity because of its analgesic property, its chemico-biologic action, and its bactericidal effect without the danger of injury to the irradiated and adjacent tissue. Actinotherapy, however, is no panacea for all oral diseases, but when indicated and properly used, it can be a valuable help in treating various oral and dental diseases.

Koblenzerstrasse 100, Bonn, Germany

Pathology

Double dental lamina: report of a rare case
(Über den seltenen Fall einer doppelten
Anlage der Zahnleiste)

Gustav Korkhaus. *Deut.zahnärztl.Zschr.*
10:887-899 June 15, 1956

Extensive malformations in the region of the first branchial cleft, such as agnathia, epignathus and micrognathia, can be fatal.

The patient, now a 7 year old girl, presented the following symptoms: (1) a double dental lamina; (2) a lower lip connected to the palate on the right mandibular side by a band of round cicatrices, and (3) a limited ability to open the mouth.

The girl, after a perfectly normal birth, could not be fed by breast. Even bottle feeding was difficult and was possible only when the bottle was inserted obliquely.

Both parents were normal and healthy, and the family history showed no hereditary abnormalities, specific diseases or developmental defects.

To overcome feeding difficulties, the band of cicatricial tissue had been severed surgically when the child was one year old.

The further development of the double dental lamina kept pace with the growth of the deciduous teeth, and influenced gradually the lower right alveolar process.

All teeth, erupting in the double lamina, had to be extracted immediately after eruption because they impaired the masticatory function.

When the girl was two years old, the lower right central incisor, which had erupted buccally in an almost horizontal direction, had to be extracted. About one year later, two supernumerary lower first and second deciduous molars had to be eliminated.

Corresponding teeth in normal position in the dental arch erupted simultaneously. Other teeth, however, erupted in triplicate.

Histologic examination of the extracted teeth revealed no abnormalities in hard substances or the pulp.

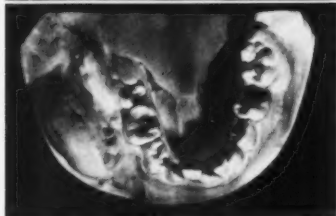
Roentgenograms taken before tooth extraction showed the full extent of the double dental lamina. Not only the deciduous lower right molars but the dental germs of the first and second permanent molars were present in triplicate.

Upper and lower jaws. Left: One year old patient. Center: Two year old patient. Right: Five year old patient





Plaster cast models of six year old patient showing upper and lower jaws and jaws in occlusion



Supernumerary second deciduous molar



Right side



Anterior region



Left side

Between the lingually displaced lower right dental segment and the additional alveolar process, a dividing groove was present, with a tissue fold running from the buccal mucosa to the right side of the lower lip.

The double dental lamina exhibited the following characteristics:

1. Supernumerary teeth on both sides erupted either in duplicate or triplicate. A future examination will reveal whether the third molars will erupt in duplicate or triplicate. Both lower second bicusps were missing, and the roentgenograms showed no dental germs for these teeth.

2. The size and shape of the double dental lamina were almost identical with those of the normal lamina. The periods of eruption and changing dentition were in harmony with the normal tooth development.

3. Neither the ascending nor the horizontal rami were affected by the anomaly which was limited to the alveolar process.

4. The band of cicatricial tissue which initially ran from the lower lip to the ascending ramus between the alveolar process and the double dental lamina formed a "second cheek."

Instances of development of a double dental lamina are extremely rare. Only one similar case has been reported in dental literature by W. Meyer in 1883.

An important question arises: Was the band of cicatricial tissue in the separating groove between the protruding mucous membrane and the lower lip a remnant of the amniotic cord or does this connecting band running to the midsection of the soft palate indicate a stalk of an epignathus?

Zitelmannstrasse 16, Bonn, Germany

Oral amyloid as a complication of myelomatosis

Lester Cahn. *Oral Surg., Oral Med. & Oral Path.*
10:735-742 July 1957

The author has seen five instances of myelomatosis with amyloid deposits in the tongue and buccal mucosa, of which three are described. All five instances had a number of salient characteristics in common. There were no frank bone lesions, no hyperglobulinemia, and the total serum protein was not raised. Bence Jones proteinuria usually was present, and sternal puncture always showed myeloma cells.

These cases seem to corroborate Apitz' theory that all instances of primary amyloid are due to myelomatosis and that in those in which examinations fail to disclose myelomatosis, the latter will develop if the patient lives long enough.

Amyloidosis was described by Rokitansky in 1840 as "lardaceous disease" because of the resemblance of the affected organs to bacon. In 1854 Virchow called this substance "amyloid" since it reacted when treated with iodine and then dilute sulfuric acid, just as starch (amylon) reacts. Askanazy, in 1904, was the first to associate amyloid with myeloma. In 1933 Magnus-Levy related amyloid to Bence Jones protein; he stated that the myeloma cell produced amyloid as well as the other abnormal proteins found in myelomatosis.

The author's first patient with amyloid infiltration in the mouth, a 60 year old woman, complained of a sore mouth and tongue, rheumatism and the loss of 16 pounds. The tongue was not enlarged, but was studded with small garnet-colored nodules. There were hyperkeratotic excrescences on the inside of her cheeks. Biopsies of one of the tongue nodules and of a buccal lesion proved them to be composed of amyloid. This possible sign of myelomatosis was ignored by both a pathologist and a clinician. The latter diagnosed her trouble as rheumatoid arthritis and, had she not fractured her hip, the correct diagnosis in all probability would not have been made while she was alive.

The second case, a 68 year old woman, had an enlarged tongue that was rigid and hard, with a few garnet-colored nodules on the dorsum. The

lingual frenum was thickened and accounted largely for the limited motions of the tongue. A biopsy of the tongue disclosed extensive amyloid infiltration.

The third patient, a 46 year old man, had a tongue grossly enlarged, with nodules and ulcerous surfaces on the buccal mucosa. A biopsy showed amyloid infiltration. Other tests conclusively proved the presence of myeloma.

Here is another oral sign of a systemic affection for which the dentist may well be the first one consulted.

888 Park Avenue, New York, N.Y.

Tetanus of oral origin

Irwin B. Robinson and Daniel M. Laskin.
Oral Surg., Oral Med. & Oral Path.
10:831-838 Aug. 1957

Although widespread immunization has greatly reduced the incidence of tetanus, on rare occasions the dentist may have to differentiate this disease from certain common dental conditions. Trismus is one of the earliest symptoms of this highly fatal disease, and tetanus occasionally arises from oral foci.

Tetanus results from the action of an exotoxin liberated by the bacillus *Clostridium tetani*. *Cl. tetani* is most commonly found in the soil, in manure and in normal human feces. Also it has been isolated as a contaminant in the oral cavity. The portal of entry is usually a deep penetrating injury and puncture wounds caused by nails or other sharp objects. In many instances, however, the organism may gain entry through superficial skin lesions. Carious teeth and postextraction wounds also may be sites of initial invasion.

The incubation period usually is about one week; however, it may be several days or several weeks. The most common premonitory symptom of tetanus is a stiffness or spasm of the muscles of mastication.

Tetanus arising from oral foci is relatively rare. Only 15 cases have been reported since 1910. An additional case is reported, with a carious tooth as the portal of entry for the organisms. Bacteriologic culture of the extracted mandibular left first molar and periapical tissue was positive for *Cl. tetani*.

Tetanus sometimes may be confused with other conditions which produce the same early symptoms. Meningitis and poliomyelitis are examples of systemic diseases which may result in stiffness of the neck and jaw muscles. More frequently, however, the dentist will encounter trismus resulting from local conditions, such as a pericoronitis around a mandibular third molar, or from a submasseteric or pterygomandibular space infection. It also may be caused by a peritonsillar abscess, a traumatic injury to any of the muscles of mastication, or accompanying temporomandibular joint disturbances. Of great significance is the fact that, although such conditions may be the primary cause of trismus, in some instances they may mask a superimposed instance of tetanus. This is particularly true with compound jaw fractures or facial lacerations. Such patients routinely should be given "booster" doses of toxoid, or, if not previously immunized, an injection of tetanus antitoxin. A delay in treatment, when the disease is present, may be fatal. Since the mortality is estimated at between 20 and 50 per cent, the importance of early diagnosis is self-evident.

University of Illinois College of Dentistry, 808 South Wood Street, Chicago, Ill.

Tuberculosis of the tongue: report of case

Bruce E. Douglas and Edward L. Foss.
Proc. Mayo Clin. 32:374-376 July 24, 1957

It is odd and interesting that tuberculous infection of the tongue is so rare, inasmuch as myriads of tubercle bacilli probably pass each day over the tongues of patients who have active pulmonary tuberculosis. A case is reported as a reminder of the phenomenon of tuberculosis of the tongue and of the fact that tuberculosis must be considered in the differential diagnosis of lesions of the tongue.

A 48 year old man came to the Mayo Clinic because of hoarseness for six months and pain in the right side of the throat and tongue for three

years. His physicians had noted a lesion in this region that progressed despite various medications, including cortisone, and an attempt at excision. The pain had been severe for the past several weeks, requiring opiates for relief and making swallowing difficult or impossible.

Examination revealed a reddened, ulcerating, tender mass on the right lateral and dorsal aspects of the posterior part of the tongue and evidence of severe laryngeal infection. Smears of sputum contained acid-fast bacilli, and biopsy of the lesion on the tongue showed a chronic granuloma with caseation. Roentgenograms of the thorax disclosed a disseminated pathologic process characteristic of miliary tuberculosis. Results of cultures and inoculation of animals subsequently proved the clinical diagnosis of tuberculosis of the tongue and larynx.

The lesions of the tongue and larynx healed completely under chemotherapy.

The virtual disappearance of tuberculosis of the tongue in recent years is probably due to the fact that pulmonary tuberculosis is now largely prevented from progressing to the debilitating stage in which resistance to infection by all body tissues is decreased. As in other extrapulmonary manifestations of tuberculosis, it is probable that the basic lesion in infection of the tongue is in the lungs.

Tuberculous lesions of the tongue are variable, occurring as ulcers, fissures, granulomas or generalized glossitis. They are found chiefly in patients who have far-advanced pulmonary disease and may be associated with lesions of other structures of the mouth and throat. Their preferred site is the lateral margin or tip of the tongue, but the dorsum is involved occasionally. Prior to the availability of chemotherapy, the prognosis was poor, and the unremitting pain caused by these lesions was most distressing. Fortunately, tuberculous lesions of the tongue respond to modern combined chemotherapy as well as or better than most other types of tuberculosis.

Mayo Clinic, Rochester, Minn.

Operative dentistry

A new device for coolant control

Paul J. Tascher. *New York State D.J.* 23:374-378
Oct. 1957

The use of coolants during grinding diminishes pain and reduces the hazard of pulp hyperemia and necrosis. At no time should a bur, stone or disk be used on dentin in a dry field. The tooth and bur should be bathed by a flow of coolant at or near body temperature. Although synchronization between the flow of coolant and the rotation of the dental cutting instrument is the simplest way to achieve coordination, it is not necessarily the best way. During the first few seconds of the operation, maximum visibility is necessary and the coolant may be a detriment. When the operator has completed the initial cuts in the enamel, and is ready to increase the speed and

pressure to enter this sensitive region, an instantaneous spurt of coolant is desirable. The coolant control, therefore, should not be synchronized but should be controlled independently by the operator.

A new apparatus is described which provides the dentist independent and instantaneous control over the flow of coolant.

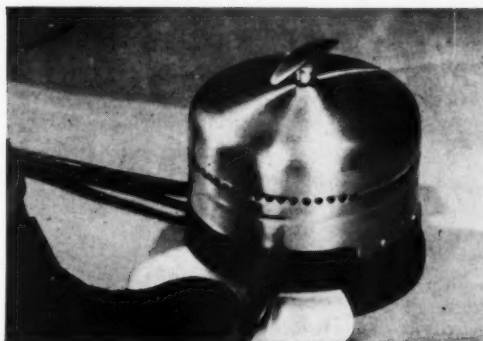
The pedal mechanism (Fig. 1) consists of a base, a saucer-shaped cylinder into which the motor foot controller exactly fits. Hinged to this base, and extending outward just beneath the pedal of the motor controller, is the separate coolant controlling pedal. Its shape follows the arc described by the pedal of the motor controller in all of its positions. Thus, when the operator's toe (Fig. 2) operates the motor controller horizontally, the same toe is always in position to operate the coolant controlling pedal with vertical pressure. The action of this pedal downward activates a microswitch that closes an electrical circuit to a solenoid valve. By using the same foot that normally operates the motor, the dentist is always ready to actuate a flow of coolant without having to shift position or redistribute his weight.

A three-way solenoid valve provides for instantaneous flow and cutoff of water. The valve has three ports. The inlet port is connected to the source of warm water in the dental unit, the thermoheater. The exhaust port is connected to the drainage or waste line in the dental unit. At



Figure 1 Pedal controlling coolant extends outward just beneath pedal of motor controller

Figure 2 When operator's toe operates motor controller horizontally, the same toe is always in position to operate coolant control pedal with vertical pressure



the end of this line is a tube with an internal diameter approximately the size of a 24-25 gauge injection needle. The outlet port is connected to one or the other of the two ports within the valve, depending on whether the valve is energized by the closing of the electrical circuit.

The operator can flush the preparation with a flow of coolant in short, intermittent spurts whenever the operation requires coolant. When an interruption in the flow of coolant is required, the flow can be stopped instantly. The operator can remove the handpiece from the patient's mouth and shift it with no danger of dripping water on clothes or equipment. The amount of coolant delivered can be varied from a small trickle to a forceful stream, according to the needs of the operation, by a manually operated volume control valve.

34 Forest Avenue, Glen Cove, N.Y.

Removing brown stain and bleaching nonvital teeth

M.M. Martin. *Texas D.J.* 75:496-498 Sept. 1957

There are many technics for removing the brown stains on anterior teeth caused by an excessive amount of fluorine in the drinking water of certain localities, and for restoring the natural shade to anterior teeth that may have become darker before or after successful root canal therapy. A safe method employed by the author has given satisfactory results.

To remove brown stain, a rubber dam is placed over the teeth requiring treatment. A liberal amount of porcelain lubricant is spread over the lips and chin. A small cotton roll or a small portion of gauze is placed under the upper lip. A 2 by 2 inch square of surgical gauze is placed over the lower lip and chin. A towel is wrapped about the patient's head to protect his eyes and face from the fumes created. Silicate fillings should be protected by varnish or by removal until the bleaching process has been completed.

A pledget of cotton is dipped in hydrogen

peroxide, 30 per cent (Superoxol) and is carried to the labial surface of the tooth with pliers. Heat is applied to the moist cotton with a previously heated ball burnisher or porcelain carrier. This procedure is repeated over and over for 20 to 30 minutes, depending on the patient's tolerance. No anesthetic is employed because it is necessary to observe the patient's response to heat, in order to prevent any unnecessary damage to the pulp tissues.

Should the treated teeth appear to be a shade or two whiter than the adjacent teeth, it can be anticipated that the treated teeth will change to a more normal color within two or three days. When the tooth color is near normal, the operator must proceed with caution.

A nonvital tooth that has undergone satisfactory root canal therapy can be bleached in the same manner, with the following steps added. The tooth is isolated with a rubber dam, with a rubber dam clamp applied to the tooth. The filling is removed and the pulp chamber is entered through the lingual opening. All filling material in the pulp chamber is removed to a depth opposite the cemento-enamel junction. A double end spoon excavator and round burs no. 2 and 5 may be used to facilitate this operation. The pulp chamber is flushed out with hydrogen peroxide 3 per cent, and with a mixture of one part alcohol to three parts chloroform. When the pulp chamber has been cleaned and dried, a few wisps of cotton saturated with Superoxol are placed in the pulp chamber and allowed to remain for a few minutes while heat is applied to a pledget of cotton placed on the labial surface of the tooth (as described in the technic for removing brown stain). A photo floodlight may be used at this stage to expedite the bleaching. The tooth should be a shade whiter than the adjacent teeth when the work is completed because it will change to a slightly darker shade in future months and years.

The procedures suggested are relatively safe, noninjurious to the teeth, produce no noticeable loss of tooth structure, and are satisfying to the patient.

San Marcos, Texas

Oral surgery

The use of frozen heterografts in maxillofacial surgery*(L'utilisation des greffons hétérogènes réfrigérés en chirurgie maxillo-faciale)*Charles Freidel. *Ann.odontostomat., Lyon*
13:101-121 May-June 1957

Maxillofacial defects usually are repaired by plastic surgery. Flaps composed of skin or bone may be taken from autografts or heterografts which transmit the vascular supply by pedicles.

Autografts have the disadvantage that a second operation is required (immediate taking of grafts from the tibia or the crest of the ilium). Also sufficient tissue must be included if satisfactory functional and esthetic results are to be obtained. Preference, therefore, should be given to heterografts which can be stored in special banks to be utilized later for various repairs.

Although the surgical technic of using frozen heterografts in the maxillofacial region is complicated, once it is mastered the results obtained are superior to those achieved with any other

method. Heterografts have a wide variety of uses. Frequently, they are utilized to repair skin loss resulting from burns or to replace tissue lost through injury, and for resection after the surgical removal of tumors.

Previously it was thought that, except in identical twins, the transfer of tissue from one person to another was futile and that heterografts, even after a primary growing together, would later grow apart.

At the Dental Clinic of the University of Lyons, France, heterografts have been used frequently and successfully to repair defects in the maxillofacial region. It has been demonstrated that heterografts will take as easily as autografts. Blood grouping apparently has no influence on the take of heterografts.

Reports of investigations on the use and preservation of frozen heterografts will continue to appear in dental literature. Proper evaluation of the results obtained at the Dental Clinic in Lyons, however, establish that the use of frozen heterografts, especially bone grafts, is preferable to autografts in the repair of maxillofacial defects because of the greater percentage of successes obtained.

In most instances, a small incision (from 1 to 2 inches) is made in the submental region and a pocket is formed over the symphysis. The extent of the undermining must correspond to the shape and size of the part to be reconstructed. The heterograft is affixed with a few catgut sutures; even the slightest displacement must be avoided.

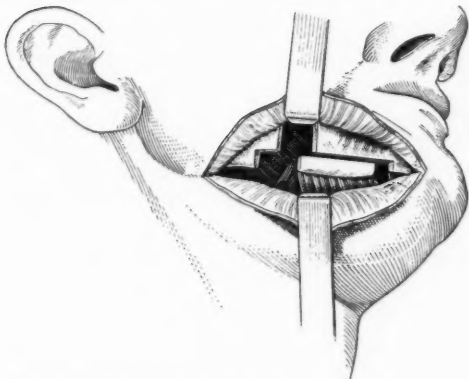


Figure 1 Autograft, pedicle flap

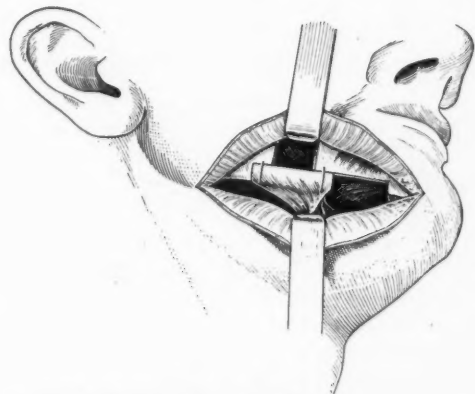


Figure 2 Heterograft, pedicle flap

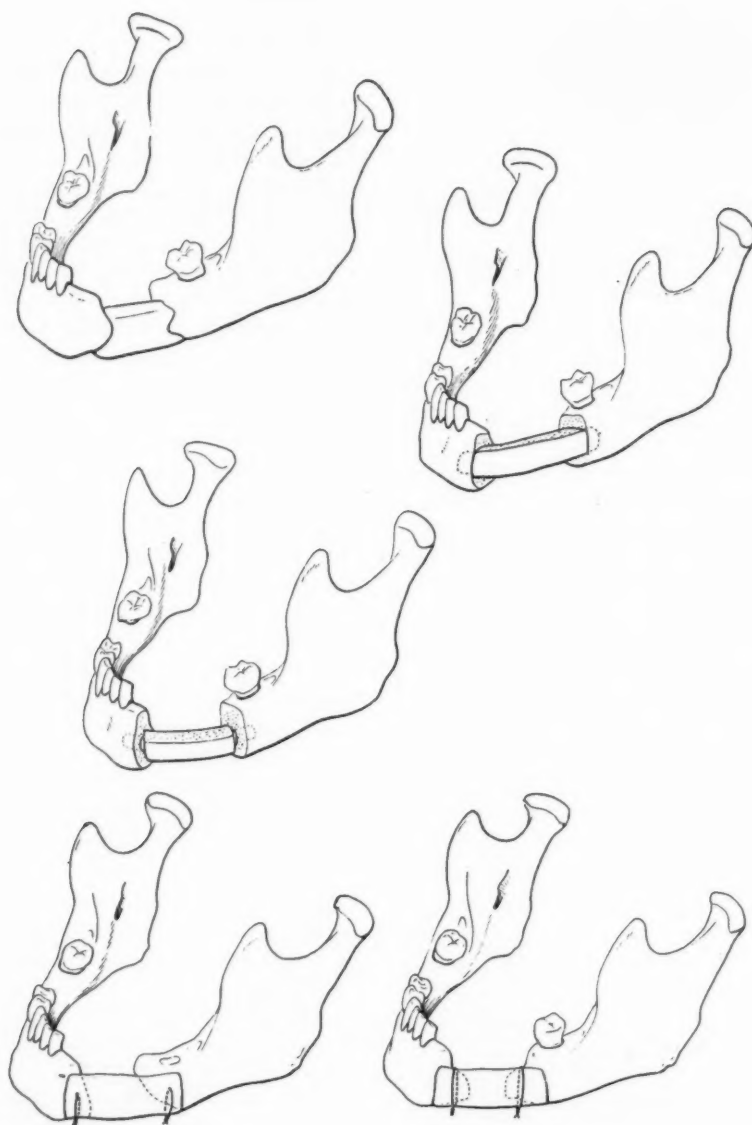


Figure 3 Different surgical procedures in fixation of heterografts in loss of tissue in mandibles

External pressure dressing will obtain complete immobilization.

If there is pronounced recession, the curved incision can be extended to facilitate reception of two or more larger heterografts. Caution must be exercised, however, to prevent injury to the mucous membrane, so exposure of the grafts in the region of the oral cavity is avoided.

If solid grafts are used, they should be sutured with catgut and affixed to the periosteum. When diced cartilage grafts are used, equal quantities should be introduced in both sides to obtain symmetry. All incisions are sutured subcutaneously to prevent contact with the external suture line.

The results obtained with frozen heterografts have been striking, and most patients take particular delight in the fact that the reconstructive work, even years after surgery, is satisfactory esthetically, and previously existing inferiority complexes have been eliminated.

6, Place Depéret, Lyons, France

Treatment of oral histoplasmosis by local injection with nystatin

Harold Plotnick and Santo Cerri. *J.A.M.A.* 165:346-348 Sept. 28, 1957

Although no specific therapy for histoplasmosis has been developed clinically, the effective inhibitory nature of nystatin on *histoplasma capsulatum* has been demonstrated both *in vitro* and in animals experimentally infected. The authors report success in treating a patient with proved oral histoplasmosis by the local intralesional injection of nystatin.

The patient, a 78 year old man, reported that firm "blisters" had been appearing in his mouth for two months. In the oral cavity were multiple, firm, nontender, mucosa-covered nodules which varied in size from 5 to 10 mm. in their greatest diameter. There were two nodules on the upper and one on the lower labial mucosa, one on the left buccal mucosa and two on the middle of the left lateral border of the tongue. The surfaces were smooth except for the buccal lesion, which had a superficial erosion but no bleeding points. The nodule from the lower lip was totally excised and submitted for histologic study. The presence of histoplasma organisms was proved.

Freshly prepared nystatin for intravenous administration diluted in 5 per cent glucose in water, representing 2,000 units per milliliter, was injected below and into the buccal lesion until a ballooning effect appeared. Three days later some regression in the size of the lesion was evident. The following day, further injections of nystatin were made. Severe pain was associated with the infiltration of the nystatin into the tongue lesions. All treated lesions slowly regressed and then disappeared.

Seven months after the patient was first seen, he was readmitted to the Cincinnati General Hospital and was found to have tuberculosis. He died shortly thereafter. The gross autopsy findings were those of pulmonary edema and miliary tuberculosis. Careful search for *H. capsulatum* was fruitless.

Histoplasmosis, once an obscure fungus disease, is being recognized with increasing frequency, especially in the endemic areas comprising southern Illinois, Indiana, Iowa, Kansas, Kentucky, Missouri, Ohio and Tennessee. The disease seems to be most frequently acquired by inhalation of spore-containing dust. Nodular, noduloulcerative, and vegetative lesions on the tongue, lips, buccal mucosa, hard and soft palate, larynx, or vocal cords are suggestive of histoplasmosis. The tongue and larynx are most often involved by a granulomatous process, which frequently ulcerates. Most patients are over 40 years old.

1737 David Whitney Building, Detroit 26, Mich.

Differential diagnosis of mandibular joint neuralgia

James B. Costen. *Clin. Med.* 4:1095-1099 Sept. 1957

The pain of temporomandibular joint origin most commonly occurs deeply in front of the ear; then, in decreasing order of frequency, the parietal region, vertex and occiput, the border of the tongue and the pharyngeal wall. The pain is increased or decreased by chewing or by certain movements of the lower jaw. These distributions of pain occur as direct trauma either to branches of the auriculotemporal nerve which supply the capsule

of the joint, or the chorda tympani lying along the medial wall of the glenoid fossa, or the fibrovascular pad which occupies the posterior portion of the joint. When condylar movement is abnormal, it is a gross and destructive movement capable of building up the pain complex to great intensity.

Success in treatment lies not entirely in elaborate changes in occlusion, treatment of sphenoidal sinus disease, or control of masseter muscle tremor, but in the assessment of the importance of each. More frequent surgical exploration of the temporomandibular joint is indicated and will reveal fragmentation of bone and dense scarring of the attached retroarticular pad.

When trismus is the result of changes within the temporomandibular joint, elastic splinting and a slight change in jaw position is the first step in reversing the cycle; it is diagnostic and is important therapy.

Painful crepitus was relieved in two patients by removal of a scarred, macerated anterior half of the meniscus; more often, the posterior half of the disk has been removed when it appeared to act as a scarred fibrotic foreign body. When this was done, care was taken to excise the retroarticular pad attached to the posterior portion of the meniscus and capsule of the joint.

At the weekly clinic supported by the John S. Swift Fund for study of temporomandibular joint neuralgia, the joints have been injected with hydrocortisone in all patients whose pain appeared to originate within the joint, whether traumatic, inflammatory or degenerative. Almost without exception, patients showed some degree of improvement. The fact that all types of patients benefit from the intraarticular injection supports the findings of Dixon and Bywaters that the hydrocortisone produces no cellular change in the tissue but raises the threshold of local reaction to inflammation or trauma.

Beginning with the elementary orthopedic principle of using a simple elastic splint on the lower jaw, the first step in diagnosis and treatment is the need to arrest movement of the offending condyle at a point slightly removed from its habitual rest position. The chronic trismus cycle is broken if the sensory trigger area for trismus is within the joint. The use of mild elastic fixation of the mandible probably is the most val-

uable therapeutic measure used in the treatment of all temporomandibular joint disturbances. Reflected heat or diathermy is an important adjunct.

Masseter tremor probably accounts for most of the 15 per cent of patients who still have pain after dental restoration. Masseter tremor is easily recognized and readily differentiated from the palsies or senile tremor. It is treated by passive elastic splinting of the mandible, tranquilizing drugs, and the removal of background emotional problems if possible.

Washington University School of Medicine, St. Louis, Mo.

Metallic foreign body in mandible for 59 years

Louis J. Loscalzo and Morton S. Brod.

U.S. Armed Forces M.J. 8:1222-1225 Aug. 1957

A 77 year old negro veteran of the Spanish-American War was referred for evaluation of a symptomatic foreign body in the right side of the mandible. The patient recalled having received a gunshot wound to the face during his military service in 1899 and of being aware that a bullet lay lodged in his jaw. His chief complaint of pain on eating, and tenderness of the cheek over the mass, had started several months earlier when the remainder of his teeth on the affected side had been removed.

A hard mass was noted over the right body of the mandible, continuous with it and extending outward, raising the thin overlying facial tissues which were tender to palpation. Intraorally, the same mass was located in the mucobuccal fold of the bicuspid-molar region, the overlying mucosa being tender and inflamed. Roentgenograms revealed the presence of a metallic fragment, 1 by 2 cm., embedded in the mandible.

At operation, a mucoperiosteal flap was reflected laterally without resistance except in the region of the mass, where it adhered firmly in capsular fashion, incorporating elements of the mental neurovascular bundle. By sharp and blunt dissection, the partial capsule was circumscribed and found to be covering a well-formed lead bullet of about 0.38 caliber. Half of the bullet was covered by bonelike tissue. The bullet was removed *in toto*. The wound was debrided, its

soft tissue margins coapted and closed with interrupted no. 000 black silk sutures. Healing was uneventful.

Bullets and other foreign bodies entering bone often do not incite a violent reaction. Usually a capsule of connective tissue forms around the foreign body, and then a layer of sclerotic bone. In this instance the tissues had adapted themselves perfectly to the bullet. There was no evidence of any lytic process.

It is reasonable to assume that the foreign body was asymptomatic in bone, but that once the thin cheek tissues were no longer supported by teeth, their distention at one point became painful, especially with motion of the jaws.

Veterans Administration Hospital, Bronx 68, N.Y.

Xylocaine intoxication: a report of three recent cases

L.R. Ningham and P.H. Malherbe.
South African M.J. 31:882-884 Aug. 31, 1957

Lidocaine (also known as "Xylocaine," "Lignocaine," "Leostesin" and "Xylotox") can be used for topical as well as infiltration and conduction analgesia. When used as an anesthetic, the onset of anesthesia is rapid, occurring within two to three minutes. It has no direct vasodilator action. Its duration of action is about two to five times greater than that of procaine. Like other drugs, it produces toxic reactions if used in excessive dosages. The first toxic manifestation is stupor, followed by spasms of the facial muscles, of the upper extremities, and then of the lower extremities, together with general depression of respiration and circulation.

The first essential in the treatment of any systemic reaction to local analgesics should be the administration of oxygen. The initial toxic effects on the cortex and medulla are stimulatory, and may be so intense as to produce convulsions. Respiratory failure resulting from overstimulation of the respiratory center, with subsequent depression, should be treated by intermittent positive-pressure artificial respiration, in conjunction with oxygen. Only after adequate oxygenation has been assured should attention be directed to the treatment of convulsions by minimal intra-

venous doses of a short-acting barbiturate. A vasopressor may be indicated if hypotension results from circulatory depression. Cardiac failure usually is secondary to respiratory failure, but may occur primarily with the rapid entry of large quantities of the drug into the blood stream.

Three case histories indicate the potential toxicity of lidocaine.

A 22 month old boy, after undergoing general anesthesia with nitrous oxide, oxygen and ether, had his mouth and glottis sprayed with 4 per cent lidocaine, without epinephrine. The spray nozzle was directed between the vocal cords and some of the solution was sprayed down the trachea. About 2 ml. (80 mg.) of 4 per cent lidocaine was used. About two minutes later, twitches of the eyelids occurred, followed by facial twitches and then generalized convulsions. Oxygen by mask was administered immediately, and the convulsions were controlled by the intravenous injection of 3 ml. of 2.5 per cent thiopental sodium. Circulation and respiration were not adversely affected.

A 24 month old boy was made similarly toxic eight minutes after receiving an infiltration of 7 ml. (140 mg.) of 2 per cent lidocaine without epinephrine. Complete recovery ensued in all three instances.

It appears that most toxic reactions to the use of lidocaine are due to overdosage which results from failure to realize its greater potency as compared with procaine, and from the tendency to omit the addition of epinephrine to solutions. The weakest concentration which will produce the desired analgesia should be used, and in all instances epinephrine should be added unless specifically contraindicated.

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Prophylaxis against bacterial endocarditis

Edward L. Quinn. *J. Michigan D.A.* 39:221-223 Sept. 1957

Individuals with rheumatic or congenital heart disease are susceptible to the development of bacterial endocarditis through the implantation of organisms on the area of previous heart damage during a period of transient bacteremia. In an effort to prevent such implantation, "prophylac-

tic" antibiotics often are administered during episodes commonly associated with intense bacteremia, such as operative procedures including dental extractions and other dental manipulations which traumatize the gingiva.

Such prophylactic measures are soundly based. Bacterial endocarditis appears in a significant relation to dental and other surgical manipulations in a large proportion of such instances. Strains of nonhemolytic streptococci cultured from the mouth and from regions of dental sepsis closely resemble those obtained from the blood of patients with bacterial endocarditis. Treatment with penicillin results in a decrease in the occurrence of bacteremia after dental manipulation.

Proof that administration of antibiotics will prevent the occurrence of bacterial endocarditis awaits further study, however. A few reports of subacute bacterial endocarditis have appeared in which symptoms of onset or relapse occurred after the extraction of a tooth, despite the fact that it had been done with apparently adequate antibiotic prophylaxis. The risk involved in the use of prophylactic antibiotics, in addition to the problems of anaphylactic reactions and the development of sensitization to the drug have not been clearly defined. The prophylactic use of an antibiotic may result in a reduction in the number of organisms susceptible to the antibiotic, but also may result in an increase in proportion or actual number of those organisms that are resistant to the drug. Despite these factors, it should not be concluded that antibiotics should not be used prophylactically. The frequency with which dental extractions and other surgical procedures precede the onset of bacterial endocarditis is sufficient to warrant continued use of antibiotic prophylaxis unless it can be shown definitely to be ineffective or harmful.

Penicillin is the drug of choice. The available evidence indicates that a reasonably high concentration of penicillin must be present at the time of the dental procedure. The duration of prophylactic treatment must be several days.

The treatment plan of choice is that recommended by the American Heart Association (1957).

In addition, dental technics resulting in a minimal degree of bacteremia should be employed. The use of local anesthesia, preferably with a

vasoconstricting agent, minimal trauma at the time of extraction, and avoidance of multiple extractions at one sitting are known methods of achieving this aim.

Patients with active bacterial endocarditis should receive the benefit of a careful check for possible dental sepsis. Elimination of dental foci of infection during the period when the patient is receiving large doses of antibiotics in the treatment of bacterial endocarditis is highly desirable.

Henry Ford Hospital, Detroit, Mich.

Autogenous transplantation of an impacted cuspid to the first bicuspid alveolus for orthodontic purposes: case report

(Transplante autoplástico de un canino incluído al alvéolo del primer premolar con fines ortodóncicos. Caso clínico)

Rodolfo Villaseca H. *Rev.dent.Chile*
46:149-153 July-Aug. 1956

Based on experience with 20 instances of autogenous transplantation of lower third molars, the author ventured a similar operation on a ten year old girl with an impacted upper right cuspid which orthodontists considered could not be corrected by orthodontic means. This tooth was pressing on the root of the lateral incisor which provoked a distal displacement of its crown. The first bicuspid had caries of the enamel and dentin.

Surgery consisted of the removal of the labial alveolar plate and luxation of the cuspid. Then the bicuspid was removed and its alveolus enlarged with surgical burs to receive the cuspid. The cavity that remained after the cuspid and its cyst were removed was irrigated, medicated with a sulfonamide and penicillin mixture and closed by interrupted sutures.

A simple wire arch was ligated to all upper teeth, and a self-curing acrylic splint was placed which covered the arch, the freshly implanted cuspid and neighboring teeth. The splint and the sutures were removed 15 days after the operation; appearance of the wound was excellent and the implanted tooth had pronounced mobility.

Nine months later a roentgenogram showed satisfactory ossification especially on the distal side of the implant. The cuspid was clinically

firm and gave a positive reaction with the pulp tester. The mucosa had normal contour and appearance.

Although the transplanted tooth must have a well developed root for the operation to be successful, the chances of the implanted tooth retaining its vitality are greater when the apical foramen is wide.

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Experiences with the combined operation for cancer of the head and neck

David Lyall and Wilfrid A. Cloutier.

New England J. Med. 257:306-311 Aug. 15, 1957

A study of a series of 60 patients in whom mandibular resection in continuity with some type of neck dissection was carried out forms the basis of this preliminary report. The results are somewhat discouraging on a long-term curative basis (20 per cent of the patients were living and free of disease after five years). On the other hand, relief of pain and other distressing symptoms of advanced cancer was frequently dramatic and of significant duration.

The patients ranged in age from 40 to 79 years, with an average of 63 years. There were 54 men and 6 women. The average duration of known disease was four and a half months before operation. All but three of the instances involved squamous cell carcinomas of the oral cavity arising on the mandible or adjacent structures.

The standard procedure was a modified Crile-type radical neck dissection combined with a mandibular resection in continuity. It was unnecessary to split the lower lip routinely. In some instances a limited dissection to the hyoid or supraomohyoid level was used.

Satisfactory results were obtained with a bayoneted stainless steel retention wire placed between mandibular fragments. The authors have not had success with elaborate prostheses, and the late results of others have not justified the initial enthusiasm for such prostheses. The same limitation applies to the attempt to restore continuity by a primary bone graft.

To achieve fixation, holes are drilled axially in the exposed mandibular ends. The stainless steel

wire is then shaped and "bayoneted," and the ends inserted into the prepared holes. If the portion of the wire to be inserted is bent slightly, it will provide sufficient purchase within the drill hole to prevent the jaw fragments from riding back and forth. This wire, like all prostheses, lies between the newly sutured oral mucous membrane and skin. Care must be exerted not to attempt to restore the curvature of the mandible but merely to bridge the gap between the mandibular ends. If the wire is bent outward to approximate the curvature of the removed mandible, pressure necrosis of the overlying skin may result. If the wire can remain in place a minimum of six to eight weeks, until cicatrization has occurred, it will have achieved its main purpose.

Mandibular reconstruction was delayed a minimum of 12 to 18 months, or until it was probable that the disease would not recur.

There were four operative deaths, two of which were preventable.

New York University-Bellevue Medical Center, New York, N.Y.

Osteochondroma of the coronoid process of the mandible: report of a case and review of the literature

Morris H. Levine, James Chesson

and William D. McCarthy. *New England J. Med.* 257:374-376 Aug. 22, 1957

Only four cases of osteochondroma of the coronoid process of the mandible have been reported hitherto.

A 73 year old woman noted that a "lump" had developed on the left side of her face after exposure to cold air more than 30 years before admission. This lump appeared to increase in size as the years passed, with progressively increased limitation of jaw motion. At no time was there pain or any associated symptom.

The excursion of the mandible was limited to 0.6 cm. The teeth were in poor condition, with many missing. Some chewing could be accomplished by lateral motion. Roentgenographic examination, including tomograms, showed a large, bulbous, boot-shaped osteochondroma of the coronoid process of the mandible expanded to fill the ring formed by the left zygomatic arch and

cranium, with erosion of the anterior portion of the zygomatic ring. After excision of the tumor-bearing coronoid process tip, vertical opening of the mouth was increased to 20 mm., and the range of action of the mandible was good. All teeth were infected. Large apical granulomas and many residual roots were removed to prevent the possibility of dislodgement and insufflation. It was not surprising that the teeth were in such poor condition in view of the prolonged lack of adequate dental function and loss of stimulation to the periodontium.

The condition is easily corrected by surgical removal of the osteochondroma and a part of the zygomatic arch. Prolonged failure to correct this condition surgically may result in a bad dental condition.

General Rose Memorial Hospital, Denver, Colo.

Clinical evaluation of antihistamines in oral surgery using the double unknown technic

G.R. Keesling and E.C. Hinds. *J.Oral Surg.* 15:279-282 Oct. 1957

Many favorable reports have been published on the effectiveness of antihistamines in reducing postoperative edema and pain and increasing wound healing after oral surgery. In this study of antihistamines, the double blind technic was used to test a placebo and the following antihistamines: pyrrobutamine compound (Co-Pyronil) and promethazine hydrochloride (Phenergan). These were given to 116 oral surgery patients with third molar impactions. All drugs were placed in capsules of the same color and size, and were given every six hours from 24 hours preoperatively to 36 hours postoperatively.

The patients were observed for evidence of edema, pain and healing, and side effects of the drugs were evaluated.

The results show not only that antihistamines were not effective in reducing postoperative pain and edema and in improving healing, but that the placebo seemed to be more effective. No drug showed any significant side effect such as nausea or vomiting.

Jefferson Davis Hospital, Houston, Texas

Sectional removal of impacted or malposed teeth

(Die Zerstückelung als Hilfsmittel bei der schwierigen Zahnentfernung)

H. J. Hering. *Zahnärztl.Welt & Reform* 58:178-190 April 10, 1957

Two technics generally are used for surgical removal of impacted or malposed teeth:

1. Removal of the tooth *in toto* after an extensive surgical exposure. The sacrificing of comparatively large quantities of osseous tissue, injuring of the supporting tissue of adjacent teeth, atrophy of the alveolar process and frequent formation of pockets are the main disadvantages of this technic.

2. Removal of the tooth in sections after a limited surgical exposure. The preservation of important parts of the osseous tissue, the avoidance of injury to the supporting tissue of adjacent teeth, prevention of atrophy of the alveolar process and the virtual impossibility of postoperative pocket formation are the main advantages of this method.

The sectional removal of impacted or malposed teeth, recommended especially for upper and lower cuspids and molars, is carried out in the following manner:

1. Clinical and roentgenographic examinations determine the indication for and the design of the surgical intervention.

2. A window is created in the canine fossa which permits clear vision, free access and ample space for the elimination of tooth segments.

3. The size and obscurity of the tooth to be extracted govern the extent of both the initial incision and the window.

4. The soft tissues are denuded and the anterior maxillary wall is exposed.

5. The window, established above the root region, is opened by simple puncture through the thin, bony plate and enlarged to the desired dimension.

6. The elimination of the fragments is carried out palatally.

The crown is exposed in the usual manner, and a chisel is used to split the distal portion. The instrument should be placed as nearly as possible in line with the long axis of the tooth (usually in

the buccal grooves). A single hard blow generally is sufficient to split the tooth into sections. No efforts should be made to split the roots.

In isolated instances it will be extremely difficult to align the chisel in the line of cleavage. A spearpoint bur can be used to drill a hole in the crown and a four-sided, tapered punch, attached to the chisel, is inserted into the hole to split the tooth into fragments small enough to be removed without difficulty. The two halves of the crown are eliminated and the root section moved to the space previously occupied by the crown and then eliminated.

The operating time is considerably reduced and all postoperative complications such as swellings, trismus and infections are avoided.

The same technic, with minor variations, can be used for the sectional removal of impacted or malposed bicuspids. The crown should be exposed buccally to the cemental border and a bilevel chisel blade, attached to the engine, is used to split the crown in halves and to separate the crown fragments from the root portion. The subsequent removal of the tooth sections is routine.

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History of the development of methods of fixation of mandibular fragments in the nineteenth century in Russia

(Iz istorii razvitiia sposobov zakrepleniia otlomkov pri perelomakh cheliuste v XIX veke v Rossii)

R. D. Novoselov. *Stomat., Moscow* 36:41-43 March-April 1957

Medical literature shows that many simple types of treatment of fractured mandibles were known by the Russian surgeons of the nineteenth century.

The first Russian traumatologist, E. O. Mukhin, in his book (1806), *The Beginning of the Science of the Correction of Bones*, introduced a method for the fixation of fractured mandibles, by which the teeth adjacent to the fractured bone, after adequate replacement of bone fragments, were ligated with either silk thread, a string, or gold wire. A wedge of cork was placed between the teeth of the upper and lower jaws and a sub-

mandibular splint was applied to secure the fixation.

In 1808 I. F. Bush described a method by which a submental support was made of two wrapped linen straps over which a bandage was placed. The literature of the first half of the nineteenth century includes descriptions of so-called "machines" introduced by Rutenick and Graefe (Germany) and Bush (England), but these appliances were not widely used. The methods of Mukhin and Bush were preferred because of their simplicity and greater comfort.

Simple gunshot fractures were treated by ligation of the teeth, and bandages. In complicated instances, with parts of the mandible crushed, a partial resection technic after the French surgeon, Dupuytren (1818), was employed. The Russian surgeon, A. Chornikovski, first pointed out the disadvantages of this technic, that is, the resulting maxillofacial disfigurement.

Great work in the treatment of gunshot fractures of the jaws was accomplished by the Russian surgeon, N. I. Pirogov, during the Crimean War (1854 to 1856). He proved that gunshot fractures of the jaws, even the most severe, could be treated successfully by methods opposed to those of the West European surgeons, Dupuytren, Bonden, Buck and other advocates of the resection technic. He devised a submental temporal splint bandage made of plaster of paris which was fixed over a suitably adapted splint of pasteboard or gutta-percha and held in place by bands.

Later, U. K. Shimanovski modified the method of Pirogov by deleting the underlying splint. In his works *Desmologic Pictures* (1857) and *Bandages of Gypsum* (1863), a peculiar bandage is described. It is composed of a submental mold of plaster of paris, and a little wooden stick with holes for the lower teeth on which it is applied. The wooden stick is tied with threads at the corners of the mouth to the submental mold which is secured by bands over the patient's head. This bandage was still used at the end of the century as an emergency bandage while the injured patient was being transported.

After the Crimean War, much attention was given to improving the methods of fixation of the fractured mandible. A. Balzaminow (1857) devised a metal splint of lead plate. In 1866 a wooden splint was invented by Nadiezhdin. In

the seventies S. M. Karst (1874) and others employed splints of gutta-percha. I. G. Karpinskii introduced a device of hard rubber attached to a head cap. At the end of the century many reports in the literature described splints made of gutta-percha, hard rubber and metal cups and wires.

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Histologic changes in structure of teeth situated in regions

of benign and malignant tumors

(Histologische Veränderungen an Zähnen im Bereiche gutartiger und bösartiger Tumoren)

S. M. Davidoff and N. Damowa. *Deut. Zahn Mund Kieferhk.* 27:28-38 Aug. 1957

Morphologic changes in the pulp and periosteum produced by certain stimulating substances or processes have been investigated by many authors, recently by Rivkind, Prikashtinova, Feldmann, and Davidoff.

Histologic changes in the pulp, enamel and periodontium of previously healthy teeth situated in the region of tumors, however, have been investigated rarely.

The first reports describing these changes in structure appeared in 1925. Euler and Hofer have investigated independently the effects of neoplastic growth on tooth structures. The results of these studies, however, are not identical.

Hofer maintains that malignant oral tumors produce certain changes in root structures which, in degree and form, are characteristic for the type of tumor present.

Euler verifies Hofer's conclusion with regard to the existence of a relation between histologic changes in root structures and the presence of oral tumors. He denies, however, that certain types of tumors produce different changes in root structures, characteristic in degree and form.

Euler ascertains that an altered chemical activity (chemism), produced by an abnormal cell nutrition, causes histologic changes. Hofer asserts that these changes can be produced only by a tractional and pressure force which is exerted by the growth of the tumor resulting in resorption of the large multinuclear cells (osteoclasts).

At the Dental Clinic of the Medical Institute of Sofia, Bulgaria, the histologic changes in the structure of teeth in the region of benign and malignant tumors were studied.

The results can be formulated briefly as follows:

1. The structures of teeth react more slowly to the stimuli exerted by the neoplastic growth than the structures of the alveolar bone.

2. The degree and form of the occurring histologic changes in teeth and roots are characteristic for the type of tumor present.

3. Teeth in the region of giant cell tumors show the most severe changes in structure. The entire periodontium is penetrated by tumor cells. The destructive process is especially observable in dentin and cementum.

4. Less severe but still serious are the changes in tooth structure produced by adamantinoma. Rapidly growing tumor cells surround and penetrate the tooth surfaces.

5. Oral sarcoma and carcinoma affect the teeth to a lesser degree. Even in instances in which an atypical epithelial proliferation in the periodontium exists, no destructive changes were observed in the dentin or cementum.

6. No pathologic alteration in the pulp was observed which could be associated with the presence of any type of tumor, benign or malignant. In all instances, the vitality of the pulp was intact. The odontoblasts kept their normal structure. No vacuolar degeneration of odontoblasts took place if fibrous tumors (epulis) were present.

7. Hyperemia in the periodontal membrane, gingivae and alveolar tissue is associated with all types of tumor.

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Hemophilia or hemophilic condition in women (Hemofilia a hemofilné stavy u žien)

G. Formánek. *Časop.lék.česk.* 96:1001-1007 Aug. 2, 1957

Hemophilia ordinarily is described as a sex-linked, hereditary disease which occurs only in the male members and is transmitted by the female members of hemophilic families.

At the Dental Clinic of the University of Brati-

slava, Czechoslovakia, two girls from different families, both 13 years old, were examined when severe hemorrhage occurred after tooth extraction. In both patients deficiency of blood platelet formation and disposition toward hemorrhage even without provocation by injury were observed. Slight bruises produced extravasation of blood into internal tissues. Hemorrhage was difficult to control, especially when it occurred in the oral mucosa or the bronchial tubes.

One year later, a third girl, 20 years old, was examined at the clinic after severe hemorrhage had followed a comparatively minor oral surgical procedure. This patient also showed impaired blood coagulation due to a deficiency of thromboplastinogen. The syndrome of hemophilia also was present in the mother of the patient. Additional data on the family histories were not obtainable.

Intravenous injection of antihemophilic plasma provided a temporary reduction of the time required for coagulation.

Hypoprothrombinemia (hemophilia A), therefore, may occur occasionally also in the female members of a hemophilic family and is transmitted through the mother as a sex-linked characteristic.

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Removal of teeth from irradiated tissue

Harold H. Niebel, Edward W. Neenan,
Robert P. Walsh and John B. Weimer.
J.Oral Surg. 15:313-319 Oct. 1957

The removal of teeth from heavily irradiated bone, after radiation therapy for malignancies, presents a problem to the oral surgeon. Since irradiated tissues have a decreased blood supply and lowered vitality, extraction must be performed with a minimum of trauma.

The occlusal surface of the tooth indicated for removal is ground out of occlusion (if an occluding tooth is present). An elastic band, similar to an orthodontic or fracture band, is slipped over the crown and carried to the gingival crest. If the tooth is multirrooted or lacks sufficient apical taper, several bands may be used. In some instances, the first band may have to be worked manually under the free gingiva. Although root

canal therapy and sectioning of multirrooted teeth may be accomplished first, it has not always been necessary.

The mouth must be kept scrupulously clean during the entire procedure of removing the teeth. Between 3 and 16 weeks are required to remove a tooth by this method. The patient may experience some discomfort the first day after application of the elastic bands, but this quickly subsides and the tooth remains asymptomatic. The tooth should be examined biweekly and additional elastic bands added as needed. Although the process is primarily one of bone resorption, some extrusion occurs. Additional occlusal grinding may become necessary. Sensitivity of the exposed dentin is controlled with silver nitrate applications.

Histologic studies demonstrate that granulation tissue fills the periodontal space and the region of bone resorption so that at no time is supporting alveolar bone exposed.

Two case histories illustrate the procedure.

*Veterans Administration West Side Hospital,
Chicago, Ill.*

Importance of dental foci in cardiac disease (Importancia de los focos dentales en cardiología)

F. Vega Díaz. *An.espan.odontoestomat.*
16:507-530 July 1957

Focal infection continues to be a clinical problem, and this is especially true in cardiovascular pathology.

Müller's original definition implied that focal infections produced, in separate organs or in the body as a whole, alterations of an inflammatory nature. The present trend is to replace the concept of inflammation by one of tissue reaction, and to distinguish between "infective foci" with no clinical manifestations, and "foci of infection" accompanied by signs and symptoms of infection.

In cardiac disease there are pathologic conditions directly related to septic foci, and the organs of circulation react even more to focal infection than to anxiety or emotional disturbance. To treat dental foci of infection effectively in the presence of cardiac or vascular diseases, it is necessary to establish the responsibilities of both the cardiologist and the dentist.

All dental foci of infection must be eliminated, and this radical approach applies not only to evident foci of infection but also to those that are just beginning, for it is then that they produce tissue reactions. All nonvital teeth eventually become septic foci.

No cardiac condition contraindicates surgery to remove the foci, but merely demands a study of when and how to extirpate them.

Surgery should be done as soon as it can be without causing further complications in the patient.

If removal will send bacteria into the blood stream, it is advisable to administer large doses of antibiotics systematically and locally, before, during and after surgery.

Tissue reaction such as rheumatic symptoms and bacterial allergies can be controlled by giving cortisone derivatives.

Finally, all local surgery on cardiac patients demands that preoperative sedatives be given by ingestion, and even injection when necessary, to combat avoidable emotional tensions.

Serrano 62, Madrid, Spain

Replantation of accidentally lost teeth

(Efterundersøgelese of taender replanteret efter exartikulation)

K. Lenstrup and V. Skieller. *Tandlaegebl.*
61:570-583 Oct. 1957

At the Royal Dental College of Copenhagen, Denmark, replantation of teeth lost in various accidents was carried out in 46 patients during 1950. There were 38 children from 6 to 15 years old and eight adults from 18 to 39 years old.

Altogether 60 teeth were replanted almost immediately after the accidental loss. There were 47 upper central and 9 upper lateral incisors, 1 upper cuspid and 3 lower central incisors.

Prior to replantation, clinical examinations determined whether the periodontal condition in each instance was favorable and whether evidence existed of interlocking caused by the formation of osseous tissue in the resorbed region of the roots.

Although there seemed to be no reason for failure in the replantation, at the end of the follow-up period, 20 of the 46 patients had lost

the replanted teeth. The time during which the replanted teeth had functioned satisfactorily varied from a few days to more than five years.

At the end of the follow-up period, 26 patients still retained the replanted teeth. In 22 patients, however, roentgenographic examinations revealed that a severe resorption of the roots of the replanted teeth had occurred from 2 to 56 months after replantation. Only in four patients had root resorption not taken place.

In two patients only could the replantation be called a success. The replanted teeth showed adequate function and stability and no root canal treatment was required. The healing process was uneventful and the vitality of the pulp was preserved.

From this study on replantation of accidentally lost teeth, the following conclusions can be drawn:

1. The prognosis for success cannot be made from the usual clinical examination because root resorption will occur in the majority of instances after replantation. When the defect cannot be repaired by endodontic treatment prior to replantation, reinsertion of the tooth into its socket should be attempted only if the preservation of the tooth can be anticipated. If a temporary preservation can be obtained, the prosthetic replacement can be postponed.

2. Success can be expected only in isolated instances in which no resorption of the root occurs and the vitality of the pulp can be preserved.

3. In instances in which root resorption occurs, the course of the gradual destruction seems to be independent from the time elapsing between the accidental loss and the replantation and also from the condition of the tooth preservation during the period between loss and replantation.

4. If accidentally lost teeth with roots still in the developmental stage are replanted immediately after the accidental loss, the pulp may keep or recover its vitality, and the further development in root formation will take place without interruption.

It is not suggested that immediate replantation of accidentally lost teeth is an original idea. Further research, however, is necessary to determine whether replantation of teeth is indicated when periodontal disease is present.

Royal Dental College, Copenhagen, Denmark


 Orthodontics

Active plate, tooth positioner and impulsator in orthodontic treatment of adults

(Aktive Platte, elastischer Gebissformer, Impulsator und ihre Bedeutung bei der Behandlung Erwachsener)

Erich Schönherr. *Fortschr.Kieferorthop.*
16:224-230 Jan. 1956

The development of removable orthodontic appliances such as active plate, tooth positioner and impulsator has increased the already vigorous discussion as to whether orthodontic treatment could or should be applied to adults.

Obviously, these new types of orthodontic appliances cause less discomfort to professionally active patients than the previously utilized fixed appliances.

"In orthodontic treatment, no age limit exists," stated A. Martin Schwarz. Korkhaus, Thielemann, Bichelmayer and Schwarz have devoted themselves almost exclusively to orthodontic treatment of adults. Previously the only orthodontic treatment of adults consisted in the application of splints to correct malocclusion.

The modern orthodontic treatment, however, utilizes Nord's active plate, Bimler's elastic tooth positioner and Tegtmeier's impulsator. Fixed metal splints are replaced by removable impulsators which can be worn day and night without discomfort. Malocclusion is corrected by the functional forces exerted by the tooth positioner. This apparatus does not distort the patient's dento-facial appearance and, therefore, can be worn during the day.

Slight deviations from the normal occlusion are corrected by the functional forces exerted by active plates, malposition of the teeth by tooth positioners, and many other occlusal abnormalities with impulsators. When these appliances are

worn by night, bruxism and disturbing breathing habits are eliminated.

Severe malocclusions, especially Class I, are corrected by the use of a specially constructed bipartite impulsator applied to the upper jaw.

In the orthodontic treatment of adults, it is important to differentiate between two groups of malocclusions:

1. Positional anomalies with pathologic alteration of the periodontium (Angle's Class II, Division 2, and Class III).

2. Malocclusions with dystrophy of the alveolar process, interfering with tooth mobility, and usually caused by exogenic factors (Angle's Class II, Division 1, and Class I).

To emphasize the necessity of orthodontic treatment of adults and to present the results of such treatments, five cases are reported:

Case 1. The patient, a 35 year old woman, presented an atypical overbite with retroversion of the mandible, accompanied by severe deviation of several teeth. Treatment consisted of application of an active plate, later combined with a tooth positioner. After 12 months, improvement was achieved. The nightly wearing of a specially designed impulsator obtained correction.

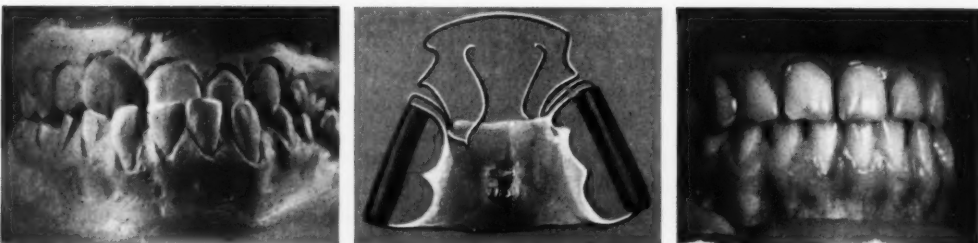
Case 2. The patient, a 19 year old girl, showed the symptoms of Angle's Class III malocclusion combined with prognathism, left side cross-bite, and diastemas between the upper central incisors and between the right lateral incisor and the cuspid. After a previous extraction of the right second molar, no contact existed between the upper and lower incisors. Treatment consisted in the application of Bimler's elastic tooth positioner and continued for eight months. Malocclusion, cross-bite and diastemas were corrected. Functional and esthetic success, however, was obtained later by inserting other orthodontic appliances.

Case 3. The patient, a 31 year old woman, presented an Angle's Class II, Division 1 malocclusion. Preliminary treatment consisted of application of an active plate but only slight improvement was obtained. After combining the active plate with a tooth positioner and an impulsator (worn at night only) normalization of the occlusion was achieved within ten months.

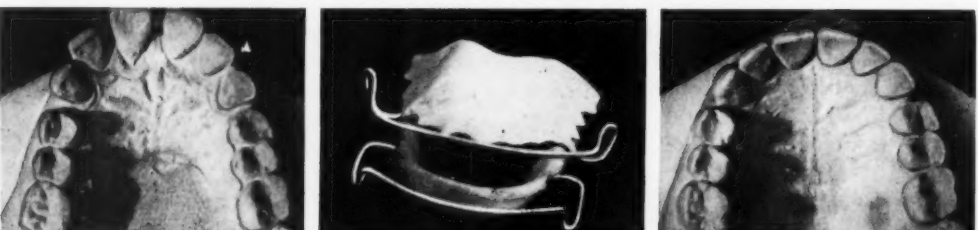
Case 4. The patient, a 42 year old woman, presented symptoms similar to those described in Case 3. Complications in this instance, however,



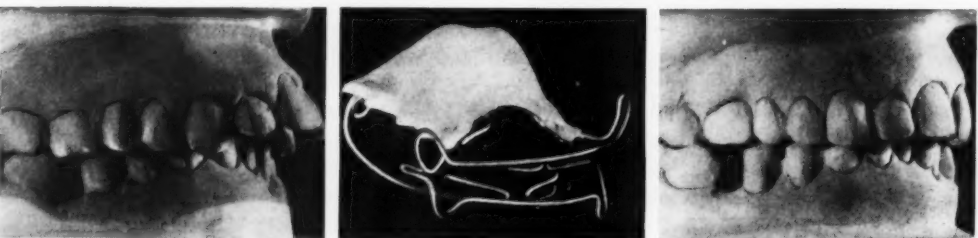
Case 1 Left and center: Before treatment. Right: After treatment



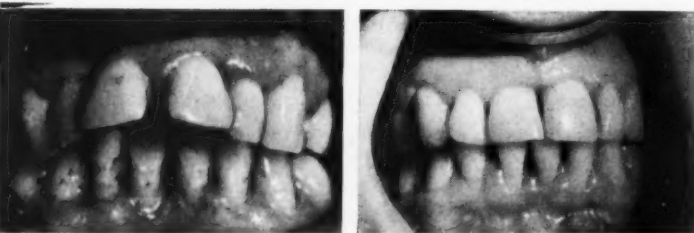
Case 2 Left: Before treatment. Center: Active plate and clasps. Right: After treatment



Case 3 Left: Before treatment. Center: Active plate and tooth positioner. Right: After treatment



Case 4 Left: Before treatment. Center: Active plate and tooth positioner. Right: After treatment



Case 5 Left: Before treatment. Right: After treatment

included positional alterations in the position of all upper anterior teeth, accompanied (probably caused) by habitual lip pressing and tongue biting. The treatment was similar to that of the previous case.

Case 5. The patient, a 27 year old man, had an extremely narrow upper jaw, overbite, diastema between the upper central incisors and a severe inflammation of the periodontium of all upper incisors which were loose. The patient's masticatory function was disturbed. Treatment consisted of elimination of the gingival pockets and application of orthodontic appliances. After 12 months of constant wearing of an active plate and an elastic tooth positioner, the disturbances of the masticatory function were eliminated and improvement in the occlusal condition achieved. The patient, now wearing an impulsator at night, has a nearly normal occlusion.

In all the cases reported in which a combined orthodontic treatment of adults had been utilized, correction of malocclusion was obtained as well as other desired results despite the fact that the ages of the patients ranged from 19 to 42.

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Aims and methodology of treatment according to age groups: permanent dentition age group

M. R. Chipman. *Am.J.Orthodont.* 43:661-678
Sept. 1957

Orthodontics is a multiphase procedure, with methodology supplying a series of logical steps for dealing in an orderly fashion with growth processes and with the prevention, correction and stabilization of dental and oral anomalies.

A number of factors must be considered before final thought is given to the mechanics of the projected treatment. In the patient with permanent dentition, changes brought about by the loss of deciduous teeth, lack of restorations, faulty nutrition, and general physical and dental neg-

lect are accomplished facts. Although growth factors are not entirely absent, the patient has passed the age level at which the greatest possibility exists of directing and encouraging growth.

Among the various factors to be considered are the following: orientation and diagnosis; health of the patient; heredity; habits which may have contributed to the original condition and which, if still present, may affect stability after treatment; dental conditions, including caries, supernumerary and missing teeth; cooperation of the patient and the parents, and the appliance of choice. Case histories are presented to illustrate each of these factors.

A thorough study of the physical background of the patient is an important step in the analysis; the findings may have a profound effect on the projected treatment, and may dictate the time of treatment, the approach to the problem, and the distance that the orthodontist may expect to proceed toward the goal.

Insufficient attention has been given the atypical tongue activity in the production of orthodontic abnormalities.

The orthodontist deals not only with the patient but with the parents. For that reason, a thorough understanding of the problems and responsibilities entailed in orthodontic procedures is necessary. Regularity of appointments and following of instructions are essential. If orthodontic treatment must continuously be secondary to social engagements or to the whims of the patient and parent, the treatment very often will result in failure.

The orthodontist must be mentally flexible with regard to the orthodontic needs of the particular patient, and must use an appliance that will fulfill those needs, rather than arbitrarily fit the patient to the appliance. If the appliance of choice does not perform as anticipated, a change may be required. No one appliance has all the virtues. A study of the limitations of each appliance is in order.

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 Pedodontics
Anesthesia in pedodontics

(Fragen der Betäubung bei der zahnärztlichen Behandlung des Kindes)

Werner Oertel. *Deut.Zahnärzte Kal.* 16:44-54, 1957

In pedodontics, serious complications often arise before, during and after anesthesia, caused mainly by individual, physiologic or psychologic characteristics.

Children never understand the necessity of any surgical intervention. They are instinctively disturbed by the strange surroundings of the dental office. The restraining function in the nervous system in children has not developed its complete power. The stimulus threshold of their vegetative system lies below that of adults. Relatively trifling stimuli, therefore, may cause abnormally severe reactions. Extreme anxiety often is promoted by an unfavorable general health, and its symptoms are observable in many children after a short illness of any kind.

The dentist must learn to exercise patience, and should never use violence. If he is unable by suggestive methods, to decrease the emotional disturbance in the child to be treated, he may try chemotherapy as an alternative. Small doses of a sedative usually are sufficient to produce calmness quickly. In isolated instances, analgesics may be added.

Pain elimination is essential even in minor operations. Many pedodontists have a preference for either general or local anesthesia, but the decisive factors for the selection of the method are the operative procedure, the time required for surgery, and the general health of the child.

An anesthetic, topically applied, often will be sufficient. Oral surgery which can be performed only under complete loss of sensibility, however, necessitates a peripheral injection anesthesia. In children, limited quantities and low concentra-

tions of anesthetics should be used. The employment of vasoconstrictors is contraindicated.

Anesthesia used for extractions of permanent teeth in children does not differ essentially from that used in adults. The extraction of deciduous teeth can be performed under Kulenkampff's plexus anesthesia. For operations on the mandible, the endosteal injection anesthesia is the method of choice.

Nitrous oxide seems to remain the best anesthetic in pedodontic treatment, although it involves a high degree of knowledge, experience and skill. Trichloroethylene is less useful because the administration of this drug must be supervised constantly by the dentist (or anesthetist), and control of child patients often is uncertain and difficult.

In certain oral surgical procedures, an anesthesia will be necessary in which all conscious actions are eliminated. Of course, all types of major surgery in which a prolonged anesthesia is required should be performed in hospitals where an experienced anesthetist regulates and supervises the anesthetic effects. In dental offices, local anesthesia, light and short, can be used. Whether regional anesthesia should be applied depends on the individual indications.

Ethyl chloride permits a favorable result when used in minor operations to produce refrigeration anesthesia. When inhaled, this drug produces a prompt anesthesia in children. Under no conditions, however, should ethyl chloride be administered more than once in one sitting. If a prolonged anesthesia is required, other anesthetics are preferable. Indications for premedication with atropine are inflammatory processes in the floor of the mouth or in the cervical region.

In order to perform oral surgery on a child without the danger of disturbance, a reliable degree of loss of tactile sensibility must be obtained. General anesthetics always should be dripped on the mask slowly because a sudden rise in the concentration may produce dangerous circulatory reflexes. As soon as the stage of tolerance is attained, the mask can be removed and the dentist can proceed with surgery. The child usually can be discharged after having rested, under constant supervision, for about ten minutes.

Isopropyl chloride maintains an anesthetic stage for about eight minutes. This drug possesses



The Dräger's inhaler unit



The Göttingen glass inhaler used for inhalation anesthesia with trichloroethylene



The endosteal injection technic



The Ayre T piece applied to a one year old child

a narrow margin of safety and requires expert care and attention.

Barbituric or diethyl thiobarbituric anesthetics generally should not be used in pedodontics.

Prolonged anesthesia is used successfully in clinics for debilitated and irrational children before complicated or multiple tooth extractions. The importance of a close and constant observation of these and other children, before, during and after anesthesia, cannot be overemphasized.

For children older than three years, anesthesia should be attained by the open drop, semi-open drop or closed method. In all instances, an adequate oxygen and air supply is essential, and keeping the patient's airway unobstructed is of great importance.

For children younger than three years, the semi-open method of anesthesia, applied with the aid of specially constructed valves or the "Ayre T piece," should be used.

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Dental conditions associated with some neurological diseases in children (Alteraciones dentales asociadas a algunas afecciones neurológicas del niño)

Camilo A. Corti. *Rev.Circulo odont. Santafesino* 5:7-10 March 1957

Among the diseases which incapacitate children, cerebral palsy occupies a position of importance. The multiple cerebral localizations of the disease produce not only the major motor alterations but also defects in vision, speech and hearing, special behavior patterns and mental retardation.

Careful examination has shown that two oral conditions are sometimes present in these patients: green pigmentation, and enamel lesions of the deciduous teeth.

One cause of cerebral palsy is the hemolysis of the newborn infant. In these patients the green pigmentation of dentin is due to the abundance of biliverdin. When the hemolysis produces an intense icterus, the hypoplasia of the enamel appears on the deciduous teeth. This takes the form of depressions which may unite into lines or rings. The position of these lesions varies with the age at which the hemolysis happens. If it occurs dur-

ing the seventh month of intrauterine life, hypoplasia appears on incisors and the cusps of molars and cuspids. Hemolysis occurring at the ninth month will produce hypoplasia at the cervical region of molars and cuspids, and the incisors will be normal or nearly so.

Therefore, the early use of dental roentgenograms will permit the pediatrician to formulate a timely diagnosis of the instances of cerebral palsy produced by hemolysis before motor, sensory and mental symptoms appear.

The specially trained dentist also can be useful in the dental health and rehabilitation program of these patients, who on the one hand are susceptible to dental caries and on the other are difficult to treat because of their varied handicaps.

1 de Mayo 2877, Santa Fe, Argentina

Surgical assistance for the eruption of four anterior maxillary teeth

William G. Browne. *D.Practitioner* 8:28 Sept. 1957

A nine year old boy was referred to the Glasgow Dental Hospital because of the failure of the anterior maxillary teeth to erupt. The four first permanent molars, the four lower incisors and the maxillary right cuspid were present. The outlines of the four maxillary anterior teeth were seen, and the teeth could be felt under the labial mucosa which was attached just in front of the alveolar crest. The deciduous teeth in the affected region had been shed naturally. Roentgenograms showed no pathologic condition of the unerupted teeth and no supernumerary teeth.

As the crowns of the unerupted teeth were lying labially to the alveolar crest, it was decided to sever the attachment of the lip from the palatal aspect. This was done under local anesthesia, and on reflection of the tissue the teeth were exposed. The attachment of the lip was secured with black silk sutures high on the labial aspect of the maxilla. The appearance of the clinical crowns was normal.

The teeth erupted and 15 weeks later were normal in appearance and position.

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Prosthetic dentistry

Biophysical principles utilized for retention of complete upper dentures

(Biofizyczne zasady utrzymania całkowitych protez gornych)

Joseph Bielski. *Czas.stomat.* 8:313-326 Aug. 1955

To obtain an adequate retention of complete upper dentures, two construction methods can be used. The first is based on mechanical factors, and the second on biophysical procedures.

In the mechanical method, retention usually is obtained by suction chambers (now more or less obsolete), mechanical adhesion and spring attachments. Because of many unfavorable secondary effects, the purely mechanical method is contraindicated in most instances.

In the biophysical method, retention is obtained through a combination of such factors as the forces of the oral, especially masticatory, muscles, and an equilibrium of all forces exerted.

The vital process must be correlated with the basic law of physics and engineering. The basic laws of physical forces affect the vital reaction of the oral tissues, whether the stress of those forces lies within or without the physiologic tissue tolerance.

The main factor in keeping complete upper dentures in position is the force of functional adhesion. The necessary tightness of the denture margin can be obtained by extending the denture edges over the borders of mobility of the mucous membrane (from 2 to 3 mm.) in order to obtain adherence to the mobile mucous membrane in every position of physiologic movements.

Three degrees of tightness are known: primary, secondary and complementary. The simplest degree, although the least accurate, is the secondary degree which was introduced by Schröder and improved by Galasinska and Gorodecki. To obtain adequate tightening, grooves are made on

each side of the edentulous model immediately beyond the line of muscle attachment.

To determine the posterior borders of complete upper dentures, the so-called "A-H" line is used. This line designates the boundary between the hard and soft palate which can be observed easily in patients in whom the A-H line is comparatively pronounced. Generally, the line follows the folds of the mucous membrane upward to the posterior margin of the horizontal lamina of the palatal bone.

Kantorowicz, however, described a more accurate method which consists of lowering the soft palate by letting the patient breathe forcefully through his nose when the nostrils are closed by finger pressure and the mouth is wide open. The line determined by Kantorowicz is the boundary between the mobile and immobile mucous membrane, and is entirely different from Schröder's A-H line. In the region of the maxillary tuberosity, the border line of mobility lies deep in the posterior region, and beyond it there are the hard and unyielding osseous structures.

In order to obtain the biophysical retention in complete upper dentures, it is important that the



Figure 1 Functional retention obtained by constant adhesion of the mobile mucous membrane to the margin of the denture

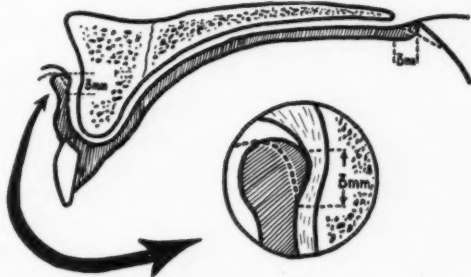


Figure 2 Border line of mobility of the maxillary tuberosity (not identical with the demarcation line of the soft palate)

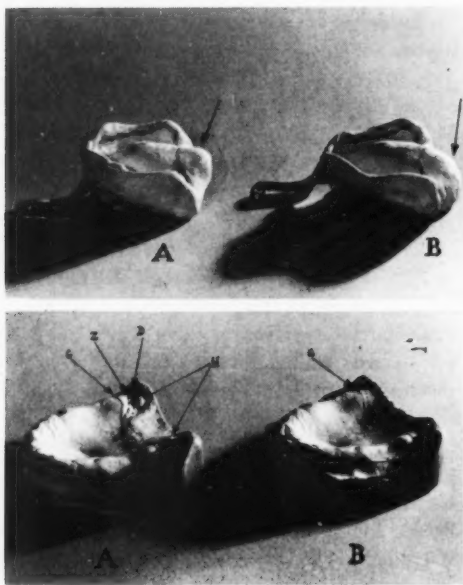


Figure 3 Comparison of models taken by (A) pressure tightening method, and (B) pressure technique. Above: impressions; Below: models. A, border line of mobility; Z, edge of maxillary tuberosity; D, demarcation line of denture to be constructed, and H, pterygoid process and sphenoid bone

depth of the retention grooves be sufficient to assure a close adaptation of the dentures after insertion. The prosthodontist, however, should not rely solely on the impression of the mobile parts on the model which may not be accurate due to faulty impression taking. Since the purpose of making these tightening grooves on the model is to reproduce the highest possible position of the mobile mucous membrane, it should be understood that the lower this position is, the greater must be the depth of the retention grooves.

Usually, the lowest position of the soft palate in the posterior region is reproduced by a reflexive lowering of the tray during impression taking. The retention grooves in the posterior region, therefore, should be made deeper than the folds in the soft tissues in the patient's mouth. It is difficult, however, to determine the required depth which should vary in each instance.

To establish accurately on the model the upper position of the soft palate, the pressure impression technic should be used which permits precise reproduction of both the anterior and posterior region. By the use of this technic, gagging reflexes during impression taking are avoided.

Ul. Jagiellonska 30, Bytom, Poland

Should dentures be worn at night?

(Sollen Zahnprothesen auch nachts getragen werden?)

Eugen Wannenmacher. *Umschau* 57:384-385
June 15, 1957

It is usually advised that the patient wear his new dentures day and night for the first week or ten days. After this time they may be removed at night to rest the oral tissues.

Most complete dentures have bases made of acrylic resin which cover comparatively large parts of the oral mucosa. Wearing complete dentures exerts a continuous pressure. Normally, the mucous membrane is constantly moistened by saliva. Beneath dentures, however, the oral mucosa is prevented from coming into contact with an adequate amount of saliva, thereby producing an abnormal condition. The acrylic denture base also may act as an insulator, producing

an unwarranted accumulation of heat which, with other factors such as irritation or continued stress, affects the mucous membrane. It seems appropriate, therefore, to advise patients to remove their dentures at night. The mucous membrane and other oral tissues require periods of rest.

When it is indicated that the patient wear acrylic dentures day and night to preserve the normal shape of the face, he should be advised to keep the denture clean and free from deposits such as food particles and calculus. This can be accomplished by using twice a day a brush made especially for cleaning artificial dentures. Baking soda, fine tooth powders or tooth pastes prepared especially for artificial dentures are excellent cleansing agents.

Complete dentures with bases made of metal can remain in the mouth for longer periods than is advisable for those with acrylic bases. Periods

of rest, at least for two hours daily, are recommended. These periods should be extended if irritating or inflammatory symptoms appear.

Immediate dentures can be worn day and night without interruption, because the extraction wounds heal better under the protective cover of the denture. One week or ten days after tooth extraction and denture insertion, immediate dentures also should be removed for at least two hours daily to give the oral tissues the required rest.

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Indications and contraindications for fixed bridges, crowns and dentures for workers in the chemical and related industries (Indikation und Kontraindikation von festsitzendem Zahnersatz bei Chemiearbeitern und verwandten Berufen)

A. W. Mayer. *Deut.zahnärztl.Zschr.* 12:861-876 June 15, 1957

During the last 50 years, chemical and related industries have expanded greatly. Occupational diseases of the oral cavity, characteristic of workers in these industries, opened a new field which may be termed "industrial dentistry."

Today each industry, occupation or profession is being challenged to do its utmost to maintain a steady flow of healthy workers to fabricate and deliver the goods needed. Whatever impedes production endangers the national economy.

Treatment of workers suffering from occupational diseases, particularly if they are chronic, with the exception of pathologic conditions in the oral cavity, belongs to the field of medicine.

It is important to practice oral hygiene, especially for workers whose occupations cause them to inhale toxic particles and corrosive fumes.

Dentists employed by chemical and related industries have reported that workers constantly exposed to the fumes of phosphorus, mercury, chlorine and various other chemical substances have shown an increase in dental caries far greater than that estimated for the general population.

Of interest to the industrial dentist are mainly the oral conditions and sequelae of occupational poisoning by chemicals. In the majority of such

instances, the problem of whether the insertion of fixed bridges, crowns, partial or complete dentures is indicated or contraindicated is difficult to solve.

The etiologic agents which are mainly responsible for oral occupational diseases do not differ greatly from toxic substances causing different types of degeneration of the hard and soft tissues of the mouth.

The insertion of fixed prostheses is indicated if occupational poisonings are present such as those caused by (1) lead or its salts; (2) sulfuric acid; (3) hydrochloric acid; (4) sodium hydroxide (but not in all instances); (5) ammonia or ammoniac; (6) hydrocyanic acid; (7) hydrogen sulfide; (8) ethyl alcohol, and (9) chlorinated paraffin.

The insertion of fixed prostheses is contraindicated if occupational poisonings are present such as are caused by (1) mercury, mercurous or mercuric compounds; (2) potassium hydroxide; (3) carbon monoxide; (4) benzine or benzene and (5) phenol.

The teeth of workers employed in chemical or related industries where acids are manufactured or used in large quantities frequently undergo a decomposition of their inorganic contents. This destructive process, however, is not identical with caries.

If the oral symptoms of occupational poisoning are severe, the patient should be hospitalized, and in such instances the insertion of fixed tooth restorations is contraindicated before complete healing is achieved.

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The full cast gold crown with facing
(Fullkronan och fullkronan med fasad sasom broförankring på vital stödstand)

S. Narbe. *Svensk tandläk.Tskr.* 49:781-792 Dec. 1956

The most preferable type of bridge anchorage is a full cast gold crown. This crown also is indicated on teeth with large, deep or superficial caries in mouths with a high caries frequency. For cosmetic reasons full crowns have a porcelain or acrylic resin facing on teeth mesial to the lower

second bicuspid and the upper first molars. This weakens the crown, as both porcelain and acrylic resin are fragile materials.

In the preparation for a full crown the occlusal surface of the tooth should be ground down so that the occlusal surface on the finished crown will have a thickness of about 1 mm. The axial walls should be slightly conic toward the occlusal surface. The preparation should extend 0.5 to 1 mm. under the gingival margin. The subgingival preparation can be done three different ways: (1) shoulder preparation for crowns with porcelain facing; (2) the bevel method for acrylic facings, and (3) the slice preparation for crowns without facing.

The aim is to obtain a smooth, harmonious preparation line without harming the marginal tissue. In low bicuspid or molars with sharply converging walls, an added retention can be obtained with grooves in the proximal walls or by parapulpal channels in the vital tooth.

The acrylic facing usually is secured by a soldered or drilled retention in the gold. Ordinarily this facing cannot be changed. Acrylic resin is not pressure resistant and often becomes discolored after a short while. Under no circumstances should it be in direct contact with the tooth substance under the subgingival preparation.

If the crown is made of certain platinum alloys, the porcelain facing can be baked right onto the crown. The usual method is to fit a porcelain facing to a backing, but the retention often is poor. The porcelain facing has to be protected by an edge of metal about 1 mm. thick. This has a poor esthetic effect. A porcelain facing does not discolor, however, and it matches the natural teeth to a high degree, and if correctly fitted it does not irritate the marginal tissue.

Caution must be shown when cementing the crown. The cement must not be too thick, as it might then be impossible to get the crown in place. A method to avoid this is to make a small perforation on the edge of the occlusal surface with a small round bur. After the crown is in place the hole should be filled with cohesive gold or gold wire. Any subgingival surplus of cement must be removed.

Correct crown form is important. Undercontoured crowns force the food products down into the gingiva during mastication. Overcontoured

crowns offer overprotection for the gingiva. Serious damage can be done to the periodontium if the occlusion and articulation are not correct. These two must always be checked on crown and bridgework.

Porcelain is the most desirable facing material, but a facing of this material is difficult to make and adjust. Acrylic resin is an inferior material, but easy to work with. Within the last ten years it has become the most used facing material. Since it should be considered only semipermanent, it is important always to make it possible to change the facing.

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Frankfurt lines (Las líneas de Frankfurt)

Miguel S. de Pipaón. *Odontoiatria, Madrid*
13:5-11 No. 1, 1956

Frankfurt lines are lines drawn on edentulous arches, upper and lower, and represent the boundaries of suction chambers in which the rarefied air becomes a positive factor in the retention of artificial complete dentures.

Postdamming is frequently ineffective because the lateral movement of the denture breaks the atmospheric seal. The placement of bilateral suction chambers tends to counteract this lateral displacement of dentures and insures their prolonged retention.

The areas to be covered by the suction chambers and the establishment of their boundaries are determined by special instruments which register the resilience and elasticity of the mucosa. The one devised by Meissner and Hermansen has a 6 mm. spherical ball which exerts a pressure of 200 Gm. on the mucosa.

The actual making of the suction chamber varies according to different technics, from the placement of elastic bands in grooves following Frankfurt lines, to using tin foil to cover the suction area. In an upper denture this system usually carries two chambers, one on each side of the median raphe.

Atmospheric pressure, or suction, however, is only important and effective initially for denture retention. Once the denture is settled this factor is replaced by adhesion and cohesion.

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Endodontics

Anatomicoradicular study of the teeth by the method of transparence

(El estudio anatomo-radicular de los dientes por el método de la transparencia)

Rafael Kasse Acta. Rev.dent.,Ciudad Trujillo 8:7-12 Dec. 1956

Many methods have been used to study the anatomy, morphology and topography of the root canals and the pulp chamber. No ideal method, however, has been found.

Okumura's method of transparence seems to provide the most exact and reliable data. Okumura has studied 2,800 tooth specimens, and his followers, among them the Argentinian Aprile y Erausquin and the Uruguayan Pucci y Reig, have investigated about 3,000.

At the endodontic department of the Dental College of Ciudad Trujillo, Dominican Republic, Okumura's method was used in studies of 30 tooth specimens to determine whether primary and secondary caries, perforation of the pulp chamber or periodontosis was present. Single-rooted and multirooted upper and lower teeth were examined immediately after extraction.

The following steps were taken: (1) perforation of tooth structures until the pulp chamber was reached; (2) immersion in a strong solution of sodium hypochlorite for eight hours; (3) rinsing with running water for 48 hours; (4) dehydration in acetone for six hours; (5) staining by submersion in India ink at 66° C. for six hours; (6) additional staining with a 10 per cent gelatin solution (mixed with India ink) by submersion for two hours; (7) air drying for 48 hours; (8) decalcification in a 6 per cent solution of nitric acid for three weeks; (9) repeated rinsing with running water for 48 hours; (10) immersion in 10 per cent formaldehyde for six hours; (11) submersion in a 90 per cent carbolic acid solu-

tion until the specimens are completely transparent and (12) conservation in methyl salicylate.

The advantages of Okumura's method consist mainly in the impregnation with India ink of the pulp chamber and root canals which increases the visibility of these structures. The external conformation of the roots is maintained and the relation between the root canals and the neighboring tissues remains undisturbed.

Complete impregnation of the pulp chamber and root canals was obtained in 95 per cent of the 30 tooth specimens; incomplete impregnation was obtained in 5 per cent.

Reports in the dental literature describe how radioactive isotopes can penetrate intact enamel and dentin structures, thereby reaching the pulp chamber and the internal structures. Radioactive isotopes can be used successfully for exact and complete studies of the anatomy, morphology and topography of the root canals and the pulp.

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A syringe for filling the dental root canals

(Shprits dlia plombirovaniia kornevykh kanalov zubov)

A. V. Poberskii. Stomat., Moscow 36:71 March-April 1957

In order to improve the filling of root canals, a syringe was introduced by the author in May 1955 which has been approved by the stomatologic technical committee of the Ministry of Health in the U.S.S.R.

The plunger rod of the syringe is provided with a helical curve to make the ejection of the filling material easier for the operator by using only a half turn of the plunger. Also the small size of the syringe has proved convenient.

After the root canal is prepared, an injection needle of 1.5 to 2 cm. is inserted. With the needle in place, the dental cavity is filled around the needle. Phosphate cement is mixed to a thin consistency and drawn into the syringe. Then the needle is removed from the canal, leaving a hole in the cavity filling; it is attached to the syringe and inserted again in the canal. By rotation of the plunger, filling cement is ejected into the root

canal until the patient feels a little pressure in the root; the filling has reached the apical portion of the root. A little more turning of the plunger presses the filling into the apex and the procedure is completed. The needle is removed and the hole in the cavity is filled. The whole procedure takes seven to ten minutes.

Roentgenograms reveal that in all instances an accurate hermetic seal of the root canals is obtained.

Petrovka 12, Moscow, Russia

Isolation and identification of spirochetes obtained from unexposed canals of pulp-involved teeth

Edward G. Hampp. *Oral Surg., Oral Med. & Oral Path.* 10:1100-1104 Oct. 1957

A detailed study was made of the occurrence, isolation, cultivation and identification of the spirochetal organisms in material obtained from the unexposed canals of teeth with pathologically involved pulps. Thirty-eight specimens obtained thus far from the studies of Mazzarella, Hedman, Brown, and Brown and Rudolph were studied.

Subsequent cultivation of this material resulted in the isolation and pure cultivation of ten strains of the small type of treponemas. In addition, four mixed cultures containing small treponemas were obtained in enrichment tubes. Of the ten pure isolates of the small treponemas obtained in this study, two were gas producers. *Borrelia vincentii* and *B. buccale* were not observed, either microscopically or culturally, in these specimens.

In addition to the small treponemas, one strain of *Spirillum sputigenum* (selenomonas) was isolated in pure culture and other strains were observed in enrichment tubes in mixed culture.

The presence of spirochetes in nonvital teeth with no exposed canals in which the supporting soft and hard tissues have not been exposed to the ravages of periodontal disease raises the important question of their mode of entrance into the pulp chamber and their role in such conditions. The only plausible explanation of the presence of spirochetes in such instances would seemingly be by spread from the gingival sulci, by direct extension through the soft or hard tissues,

or by way of the lymphatic or blood channels. The demonstration of spirochetes in teeth adds credence to the assumption that the oral spirochetes may possess invasive properties under certain conditions. This phase of the problem is in need of further elucidation and is being given consideration.

National Institute of Dental Research, Bethesda, Md.

The effect of gutta percha, silver points, and Rickert's root sealer on bone healing

H. A. Hunter. *J. Canad. D.A.* 23:385-388 July 1957

A knowledge of the reactions of living tissues to foreign substances used in obliterating root canals is essential in planning endodontic treatment. Since these materials remain permanently embedded, those inciting the least reaction are to be preferred. A study was undertaken to show the reactions of living tissues to three foreign body implants—pure silver points, gutta-percha points and Rickert's root sealer.

The silver and gutta-percha points were cut into 2 mm. lengths suitable for implantation. The Rickert's root sealer was mixed on a glass slab; as it hardened, small portions were rolled out between glass slides until they had a diameter of about 1 mm. When fully hardened, they too were cut into 2 mm. lengths. The materials were stored in a 1:500 aqueous solution of nitromersol for at least two days, and were implanted in holes bored in the tibias of guinea pigs. Fifteen guinea pig tibias were thus treated, five with each of the three test implants. Samples of each test material were taken at intervals of one, two, three, four and six months, and histologic sections of the experimental regions were prepared.

All the regions with implants healed readily, having been protected by penicillin during the postoperative period. The minimal amount of bony proliferation and fibrosis about the three types of implanted materials confirmed the observations of earlier workers. Silver and gutta-percha were compatible with the adjacent living tissues, whether they were bone, fat, fibrous or hematopoietic tissues, and there was no sustained phagocytic action. With Rickert's sealer

the basic tissue reaction was similar, with minimal fibrosis and bony hyperplasia. A foreign body reaction, however, showed sustained phagocytosis of its component particles even at the end of six months, which attested to the non-permanent nature of such a material. Silver and gutta-percha are both stable and permanent, whereas Rickert's sealer is nonpermanent and is removed by phagocytosis.

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The scope of iontophoresis

in periapical treatments (Alcance de la iontoforesis en los tratamientos periapicales)

José Forteza-Rey. *An.espan.odontoestomat.* 16:423-430 June 1957

Iontophoresis has undergone many changes since its introduction about 50 years ago. The percentage of success has increased with the technical improvements developed. The best technic is that advocated by Bernard in which hydroxyl ions are liberated. Because Bernard's technic produces alkalinity in the periapical region, it has two extraordinary advantages. In the first place, this alkalinity hinders the growth of bacteria which normally develop in acid media. In the second place, an alkaline medium favors bone recalcification.

As regards type and magnitude of lesion to be treated, there are no contraindications to the use of iontophoresis; in certain instances, however, it may be advisable to administer more milliamperes per minute.

The youngest patient treated by the author was a girl eight years old; many patients between the ages of 9 and 12 have been treated.

Treatment is possible in advanced age, though it is not needed so frequently. The oldest patient successfully treated was 70. Treatment is also indicated during pregnancy.

The conclusions are that with iontophoresis it is possible to treat effectively patients of extreme age, as well as patients with chronic diseases, and pregnant women.

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Clinical and bacteriologic investigation of oral infections after pulpotomy or pulpectomy

(Klinisk-bakteriologiske undersøgelser af risikoen for inficering af restpulpa ved vitalamputation og extirpation)

S. B. Jensen. *Tandlaegebl.* 61:555-569 Oct. 1957

Many reports have appeared in dental literature describing the formation of abscesses located in the horns of vital pulps, exposed as a result of caries. The rest of the pulp remained normal and uninfected.

Cultures taken after pulpotomy and pulpectomy have shown that in many instances bacteria had been forced into the blood stream as a direct result of the surgical intervention.

At the Royal Dental College of Copenhagen, Denmark, in 24 patients with chronic pulpitis, pulpotomy or pulpectomy was performed without the application of chemical disinfectants.

This study was carried out to prove experimentally that the bacteria spread from crown cavities or exposed pulp surfaces can cause complications in pulp surgery and root canal treatment.

Cultures were obtained from cavities and exposed pulps before surgery and from the apical regions after surgery.

Bacterial examination revealed that streptococci and diplococci were present in from 85 to 95 per cent of the patients. In the apical and coronal regions gram-positive cocci and gram-positive sporozoites were established.

Irrigation of root canals with a 2 per cent solution of chloramine-T and application of dressings with camphorated parachlorophenol, between pulp surgery and endodontic treatment, were carried out in 26 patients.

Although the bacterial growth was inhibited experimentally, the root canals were not sterilized. In almost all instances, bacteria were lodged in the small apical canals.

The use of aseptic agents in pulpotomy, pulpectomy and endodontics cannot be overemphasized.

Royal Dental College, Copenhagen, Denmark


 Periodontics

The application of the ultrasonic dental unit to scaling procedures

Walter N. Johnson and John R. Wilson.
J.Periodont. 28:264-271 Oct. 1957

This study was undertaken to demonstrate the effectiveness of ultrasonic energy in removing calculus and other deposits from the teeth. The Cavitron ultrasonic dental unit was used, with the "output" set at 70, and the unit was tuned for maximum cavitation. Heavy deposits of calculus were easily removed, amidst a spray of water, from an extracted tooth. Stain was also removed effectively.

Teeth with heavy calculus in ten clinical patients were scaled ultrasonically. Figure 1, left, is a lingual view of the lower anterior teeth of a 37 year old woman before scaling; Figure 1, center, shows the same teeth after ultrasonic scaling. Clinical inspection of the scaled teeth revealed no residual deposits. These six teeth were scaled in 18 minutes. During the instrumentation there was slight hemorrhage from the gingiva. The patient was not anesthetized and reported no disagreeable sensations. Water was delivered to the

handpiece from the heating unit of a standard rather than from an ultrasonic dental unit.

The effectiveness of ultrasonic scaling then was compared with that of conventional hand scaling. A 42 year old man with six condemned lower anterior teeth was selected. The subgingival root surfaces of the mandibular left central incisor, lateral incisor and cuspid were scaled with hand scalers, and the right central and lateral incisors and right cuspid were scaled ultrasonically. Constant aspiration was required during the ultrasonic scaling to control the excess water. No aspiration was used during the hand scaling (Fig. 1, right).

More deposits were removed during the 40-minute period with the ultrasonic instruments than during the 40-minute period with conventional scalers. The ultrasonic method was effective in removing stain from the lingual coronal surfaces. Some gouging or scratching on the root surfaces was seen on all six teeth; this marking was more pronounced on the teeth scaled ultrasonically. The patient appeared to be more relaxed during the ultrasonic scaling and expressed a preference for that method. He cited the absence of tugging and scraping associated with hand scaling. There was less hemorrhage associated with the ultrasonic method.

Seven scaling tips for the ultrasonic unit have been designed (Fig. 2). The authors find that scaling tips no. 1, 2a, 2b, and 4 are the most efficient, because the working ends of these tips describe an elliptical motion during function. Tips no. 3a, 3b, and 5 are more rigid so that the elliptical motion is reduced and their scaling effectiveness is reduced.

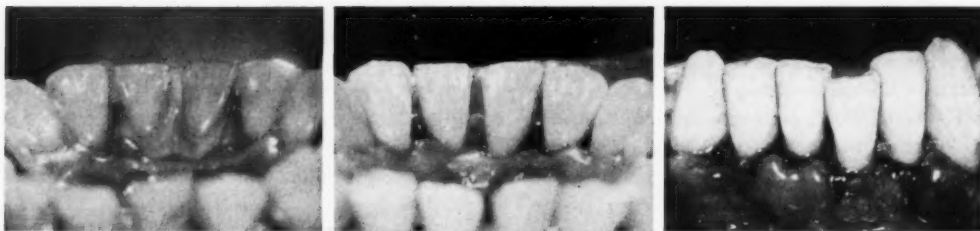


Figure 1 Left: Lingual view of the lower anterior teeth before ultrasonic scaling. Center: View of the same teeth after ultrasonic scaling. Right: The right cuspid, lateral and central incisors were scaled ultrasonically; the left cuspid, lateral and central incisors were scaled by hand

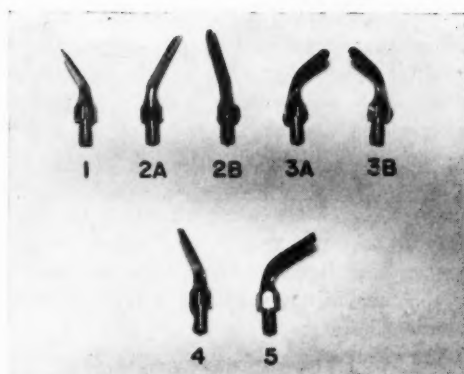


Figure 2 Ultrasonic scaling points

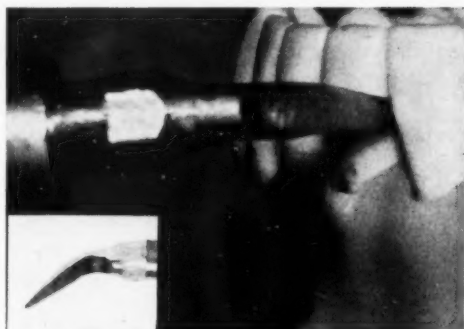


Figure 3 Ultrasonic scaling point no. 1

The experiments confirm the preliminary reports of Zinner with respect to ease of calculus removal, lack of hemorrhage, and patient acceptance. The minimum amount of water required for the ultrasonic procedure still resulted in an overflowing field which could be controlled only with the aid of a Vacudent. Other conclusions were as follows:

1. The ultrasonic scaling technic will remove calculus.
2. Only light pressure is necessary to scale ultrasonically.
3. Stains are effectively removed with the ultrasonic scaling technic.
4. Cementum under calculus is virtually unharmed after scaling ultrasonically if the working end of the instrument is flat instead of sharp and if only light pressure is used.
5. Comparatively little hemorrhage is associated with the ultrasonic scaling technic.

6. Calculus is removed more rapidly ultrasonically than with conventional scaling methods.

7. Calculus removal is possible when the ultrasonic method is used without water, but is impractical because of heat generated by the friction.

8. When water hits the vibrating ultrasonic scaling tip, a mist is generated which makes vision difficult.

9. Patients expressed a preference for ultrasonic scaling.

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A consideration of vaccine therapy in periodontal disease

Basil G. Bibby. *J. Periodont.* 28:300-303
Oct. 1957

During the first quarter of this century a number of vaccines for the treatment of periodontal disease were marketed in the United States and Europe. Although most of the published reports were favorable, it appears that the cumulative results were not striking enough to maintain confidence in this type of therapy. The use of vaccine therapy decreased and before long periodontal vaccines disappeared from the American market.

Among the reasons why the vaccine treatments of 30 or more years ago were disappointing are the following:

1. Too much was expected of them. They were recommended almost entirely for use in advanced periodontitis with active suppuration. Regardless of the potency of the vaccines, nothing but failure could have been expected unless local factors had been eliminated.
2. The nature of the vaccines may have been at fault. They usually were designed to combat pyogenic organisms, such as staphylococci; this is not in keeping with current concepts either of the nature of the bacteria involved or the mechanism by which they attack the tissues.
3. The vaccines were marketed during the period in American dentistry when the theory of "focal infection" was prominent and there was less interest in conserving teeth.
4. The vaccines may have produced no benefits, and the theory and experiments on which

they were based may have been scientifically unsound.

A review of recent bacteriological literature suggests that the possibility that vaccine therapy could be effective in periodontal involvement must depend not on theoretical considerations, but on whether the right type of treatment will stimulate the mobilization in the gingiva of effective tissue defenses which might be an antibody response or some other effect in the micro-environment of the gingiva which will reduce the disease process.

Consideration of the possible value of vaccine type therapy was prompted by a request for an evaluation of the subject by a group which reported favorable responses in certain types of gingivitis after use of a mixed bacterial antigen contained in a dentifrice base. Confirmatory clinical experience of individual dentists gave enough significance to the original claim to justify the survey of the literature and the setting up of some clinical and laboratory studies. Work along these lines is under way in several institutions.

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Extension of exudate into supporting structures of teeth in marginal periodontitis

Henry M. Goldman. *J.Periodont.* 28:175-183
July 1957

An investigation was undertaken to determine the pathway of the inflammatory infiltrate into the subjacent tissues, in marginal periodontitis. Mesiodistal and buccolingual sections from 15 human jaws affected by periodontal disease were studied histologically.

Gingival inflammation is first seen in the region below the sulcus. Here, the inflammatory cells become densely packed as the disease progresses. The inflammatory process soon extends into the deeper structures. The gingival corium as a whole soon contains either sparsely distributed groups of inflammatory cells or in some instances is entirely occupied by such cells after destruction of the collagen element.

Progressing from the gingiva, the inflammatory exudate extends throughout the attached gingiva, at times into the alveolar mucosa. The infiltrate

in the interdental papilla progresses apically through the transseptal fibers and into the marrow spaces of the interdental septum. The progress of inflammation of this region, however, does not solely extend into the bone but also follows the pattern seen in the marginal region. Buccolingual sections of the interdental region disclose that the pathway extends not only into the bone but outside, buccally or lingually, of the bone in the gingiva itself. Occasionally, an infiltrate is found in the periodontal membrane adjacent to the interdental septum.

The changes in color, consistency, form and so forth seen in gingival disease are caused by the apical progression of the inflammatory elements in the gingival tissue.

The course of the inflammatory infiltrate in marginal periodontitis consists of apical progression into the alveolar processes (buccal, interdental and lingual) and into the gingival tissue itself. Occasionally, focal accumulations of inflammatory cells are found in the crestal region of the periodontal membrane. The changes which occur when the periodontium is subjected both to marginal injury and occlusal trauma are independent.

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Vitamin C therapy in periodontal disease

George W. Muller. *Acad.Rev.* 5:123-125
July 1957

A review of the literature reveals opposing views on the utilization of vitamin C as a therapeutic agent in the treatment of periodontal disease.

In studies of the relation of malnutrition to dental pathology, it has been agreed that a similarity exists between the symptoms of a vitamin C deficiency and diffuse alveolar atrophy once the periodontal condition has become manifest.

Removal of calculus, elimination of pockets, equilibration of occlusion and stimulation of the gingiva by massage is still of importance in the control of periodontal disease and cannot be replaced by, but can be supplemented by, vitamin therapy. To treat gingival conditions by dietary means alone will not obtain the optimum health of the tissues.

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**Relation between marginal periodontitis,
vegetative tonic level
and electrocontractility
of the masseter muscles**

(Untersuchungen über die Zusammenhänge zwischen den marginalen Parodontopathien, der vegetativen Tonuslage und elektrischen Vorgängen in den Masseteren)

J. Eschler and H. Paul. *Stoma* 9:54-60 Feb.; 67-75 May and 131-143 Aug. 1956

At the Orthodontic Clinic of the Dental Institute of the University of Freiburg/Breisgau, Germany, the relation that exists between progressive marginal periodontitis, the tonic level of the vegetative nervous system and the electrocontractility of the masseter muscles was studied.

Twenty-eight hospitalized patients with progressive marginal periodontitis were examined, the past history of the patients and their families, the environmental conditions, and the experiences and sensations of the patients were recorded, the condition of the dentition and gingiva studied, the presence of leukocytes and erythrocytes determined (Pappenheim's stain count), the contents of calcium and potassium in blood serum established, the glucose in the blood tested (Hagedorn-Jensen's method), and the oculo-cardiac reflexes determined (Aschner's method).

It was observed that the pathologic course of this disease parallels the course of disturbances in the sympathetically influenced vegetative nervous system. The previously assumed relation between disturbances of the vegetative system and the electrocontractility of the masseter muscles, however, could not be established.

In instances in which an asymmetric localization of acute inflammatory processes in the periodontal tissues exists, the more strongly affected side will show a more pronounced tonic curve than will the less affected one.

The normal balance between the functions of the various oral muscle groups has no bearing on the course of periodontitis after the deep periodontal pockets have been formed. Bacterial accumulations, inflammations, suppurations and necroses play an important part in the pathologic course of this disease.

Günterstal, Freiburg/Breisgau, Germany

Periodontal disease in the rice rat.

**IV. The effects of antibiotics
on the incidence of periodontal lesions**

Om P. Gupta, Aina M. Auskaps and James H. Shaw. *Oral Surg., Oral Med. & Oral Path.* 10:1169-1175 Nov. 1957

A study was undertaken to explore the effects of penicillin and streptomycin on the initiation and progression of periodontal lesions in the rice rat. Two hundred and fourteen rice rats were used in four experiments.

Supplements of 0.05 per cent penicillin or of 0.05 per cent streptomycin to Keyes' cariogenic ration 4 or Harvard cariogenic ration 30 throughout the 21 week experimental period caused major reductions in the number and extent of soft tissue lesions but much smaller reductions in the amount of alveolar bone resorption. A supplement of 0.01 per cent penicillin to ration 700 was also highly effective in the prevention of periodontal lesions, whereas a comparable supplement of streptomycin was much less effective.

Supplements of 0.05 per cent penicillin or 0.05 per cent streptomycin to ration 700 during the last seven weeks only of the experimental period were much less effective. Penicillin caused a moderate amount of healing of existing lesions of the soft tissues, whereas streptomycin did not encourage healing but did prevent further progression of soft tissue lesions. Neither had any striking influence on the resorption of alveolar bone in the curative test.

The mechanism of action of penicillin and streptomycin on the initiation and progression of periodontal lesions needs further exploration. The fact that both penicillin and streptomycin were effective in preventing the periodontal syndrome in the rice rat is surprising, since both antibiotics have comparatively narrow spectrums that are opposite to each other. Other antibiotics should be tested for their ability to alter the initiation and progression of lesions in the periodontium of the rice rat. Further studies should be undertaken to evaluate the degree to which lesions of the soft tissues of the periodontium and alveolar bone resorption may be independent of each other.

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Public health
dentistry

**Teeth of five year old
London school children (1955)
with a comparison of results obtained
from 1929 to 1955**

May Mellanby, Helen Coumoulos and Marion
Kelley. *Brit.M.J.* No. 5040:318-322 Aug. 10, 1957

A survey of the dental condition of five year old children attending London County Council day schools in 1955 was made in continuation of a series begun in 1929. From 1943 to 1951 the survey was carried out at two-year intervals.

The teeth of 1,205 children were inspected in the 1955 survey. The percentage of carious teeth was 31.6 per cent in 1955, compared to 27.5 per cent in 1951, 26.7 per cent in 1949, 20.3 per cent in 1947, 26.5 per cent in 1945, and 30.1 per cent in 1943. In 1947 there was a smaller total amount of decay, and less of each grade, than in any other year, whereas in 1955 there was the largest total incidence, with more severe caries than at any time since 1943. The children who had some carious teeth in 1955 had a high average incidence, 7.2 teeth per child being carious as compared to the next highest figure of 6.8 in 1943 and 1945 and to the lowest of 5.5 in 1947.

In 1955, as in the surveys of earlier years, black and dark brown stains appear to have had an inhibitory effect on caries, whereas green stain had the opposite effect.

In all the surveys a positive relationship was found between surface structure and caries in each type of tooth; the greater the degree of microhypoplasia (M-hypoplasia, King, 1940), the greater the amount of caries.

Is there any reasonable explanation of the rapid improvement in the dental condition of the school children between 1943 and 1947, as compared with that occurring between 1929 and 1943, and

of the increased amount of caries in the later years?

It is unlikely that fluoride in the water supply played any part. The fluoride content of the drinking water in the areas from which the children were drawn was low (0.15 to 0.20 ppm) and constant for the period covered. There is no evidence of an increased use of the toothbrush, at least during the war and immediate postwar years. During the war the average supply of sugar, sweets and chocolates was low and more or less constant until after 1947, and continued at a low level until 1951 or after.

The improvement in dental conditions from 1929 to 1947 and the later increase in incidence of caries were partly, if not largely, due to nutritional changes, especially those affecting the fetus and the young child. When war broke out, food with high calcifying properties was directed to expectant and nursing mothers and infants. After 1947, although foods containing calcium and vitamins D and A may have remained available at the wartime level, it is not known to what extent such foods were used by mothers and young children.

Medical Research Council, Hampstead, London, England

Teeth of London children

R. B. D. Stocker. *Brit.M.J.* No. 5042:467-468
Aug. 24, 1957

Lady Mellanby and others, in their report of the 1955 dental survey of five year old London school children and comparisons with earlier surveys, state: "Comparison of the surface structure of the teeth examined over the years reveals that up to 1947 there was a great improvement, but that from this period onwards more M-hypoplasia was seen, although the increase did not appear to be as pronounced as was the increase in caries during the same period." They omit the incidence of M-hypoplasia in any year except 1955, but reference to the earlier articles in the series suggests that their statement may be misleading. From 1949 to 1955, for example, there was a pronounced fall in the incidence of M-hypoplasia together with a pronounced rise in caries inci-

dence. It also appears that in 1945 and 1955 the incidence of each grade of M-hypoplasia was nearly the same, but the caries incidence was more than 15 per cent higher in 1955.

The admirably detailed and extensive data presented in these articles justifies a more thorough statistical analysis than they have received. The authors seem to have been tempted to select parts which support the vague theory that "in general, the better the structure of a tooth—that is, the less M-hypoplasia—the greater its resistance to caries," and to gloss over the evidence they have found that some systematically variable factors other than structure must account for much of the large variations in caries incidence observed.

The orthodox explanation of most of the facts discovered is far more satisfactory than any theory that the authors offer.

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Dental caries and dental care needs in Baltimore school children (1955)

H. Berton McCauley and Todd M. Frazier.
J.D.Res. 36:546-551 Aug. 1957

Two dental surveys of Baltimore's school children have been conducted recently by the Baltimore City Health Department. The first, in March 1952, yielded broad estimates of tooth decay experience in 12,000 public and parochial school children aged 5 through 18 years. A second survey, conducted between March 15 and May 19, 1955, was designed to test the validity of the 1952 observations and to inquire further into the relative importance of biosocial determinants of dental caries, such as sex, race and socioeconomic status, and the preventive role of oral hygiene. In the 1955 survey, 1,800 boys and girls of the white race and 720 children of the Negro race in the age groups of six, eight and ten years were subjects of study.

The 1955 survey confirmed the caries experience observed among white children in 1952. The increased prevalence of tooth decay among negro children, observed in 1955, may be attributed to the design of the 1952 survey; in 1952 two teams of dentists performed the in-

spection, whereas in 1955 one dentist observed both groups.

Children living in relatively good socioeconomic circumstances experienced no fewer instances of dental caries than those in meaner circumstances. An inverse relationship was found between caries experience and an index of oral cleanliness. Dental care in eight year old and ten year old white children was related to their socioeconomic status, but negro children received little care at any age. Unmet needs for dental treatment were substantial at every population level.

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Hypodontia in the permanent dentition: a clinical and genetical investigation

Hans Grahnén. *Odont.Revy* 7:1-100 1956

An investigation was undertaken to determine the frequency of hypodontia—the congenital absence of one or more teeth—in a Swedish population, and to examine, by family studies, the etiological significance of genetic factors.

Group A consisted of 1,006 school children from 11 to 14 years old. In this group the third molars were not examined. The frequency of hypodontia was 6.1 per cent. The mandibular second bicuspid showed the highest frequency of hypodontia (2.8 per cent). Next in frequency were the maxillary lateral incisors (1.6 per cent) and the second bicuspid (1.4 per cent). No instances of hypodontia of the maxillary central incisors, first or second molars, mandibular cuspids or first and second molars were found.

The ratio of congenitally missing teeth between the maxilla and mandible was 48:61. The corresponding ratio between the right and left sides was 55:54.

About 85 per cent of children with hypodontia had either one or two teeth congenitally missing. The greatest number of missing teeth was eight.

Symmetrical hypodontia occurred, on an average, in 49 per cent.

The frequency of peg-shaped maxillary lateral incisors was 1.7 per cent.

There were no significant differences between the frequency of hypodontia in boys and girls.

Substantially similar results were found in Group B, which consisted of 1,064 students and dental nurses at the Royal Dental School in Malmö, ranging in age from 17 to 43 years. The mandibular second bicuspid showed the highest frequency of hypodontia (2.3 per cent), followed by the maxillary lateral incisors (1.7 per cent) and the maxillary second bicuspid (1.6 per cent). The ratio of 117 congenitally missing teeth between the maxilla and mandible was 67:50, and between the right and left sides 62:55. About 79 per cent of those with hypodontia had either one or two teeth congenitally absent. The greatest number of missing teeth was 7. Symmetrical hypodontia occurred, on the average, in 58 per cent. The frequency of peg-shaped maxillary lateral incisors was 1.3 per cent. There was no significant sex difference.

The frequency of hypodontia of one or more third molars was 25 per cent. In the maxilla, the frequency of hypodontia of the third molars was 17 per cent, and in the mandible it was 15 per cent. One third molar was congenitally absent in 10 per cent, two in 9 per cent, three in 2 per cent and four in 4 per cent. The frequency of symmetrical hypodontia in the third molar region was, in the maxilla, 46 per cent and in the mandible, 57 per cent of those with hypodontia. The individuals who had hypodontia in a region other than the third molar region had a higher frequency of hypodontia of the third molars (55 per cent).

In the family studies, parents and sibs of 171 individuals (from Group A) with hypodontia were examined. The series comprised 685 individuals. In the majority of parents it was impossible to determine whether hypodontia existed. The dental and genetic analysis in this group, therefore, has been based mainly on the *propositi* and their sibs. The results were as follows:

The over-all frequency of hypodontia (excluding third molars) in parents and sibs of the *propositi* was significantly higher than in the population as a whole (Group A). Although there were no significant differences between the frequencies of hypodontia in the two sexes, the mean values were higher for women. The total number of congenitally missing teeth in *propositi* and their sibs was greater in the maxilla than in the mandible, but the frequency of hypodontia was higher in

the mandibular second bicuspid than in the maxillary second bicuspid region. Symmetrical hypodontia occurred, on the average, in 59 per cent. The frequency of hypodontia of one or more third molars was greater in the individuals who had hypodontia in another region, and they had a frequency of 51 per cent. The frequency of other defects (ectodermal disturbances) in individuals with hypodontia was not greater than in those with no hypodontia. Analysis of nondental characteristics such as parental age at the birth of the child, maternal health during pregnancy, health of the child during the first years of life and birth rank and social conditions, did not suggest any explanation for the difference in frequency of hypodontia between these families (Group AF) and the population as a whole (Group A).

The genetic analysis strongly supports the hypothesis that hypodontia is genetically determined. The simplest explanation is that, in the majority of instances, hypodontia (excluding third molars) is primarily determined by a dominant autosomal gene with incomplete penetrance and variable expressivity. In sibships in which the *propositi* or the parents had hypodontia of six or more teeth (third molars excluded), the penetrance appears to have been high. In those sibships in which the *propositi* had hypodontia of five or less teeth, on the other hand, it appears less complete. The possibility of several genetic entities being involved cannot be excluded. Peg-shaped maxillary lateral incisors are probably a modified manifestation of the same genotypes that cause hypodontia.

Royal Dental School, Malmö, Sweden

Dental caries in Ireland

Irish D.Rev. 2:9-12 Summer 1956

A dental caries survey was undertaken by the nutrition committee of the Medical Research Council of Ireland, to ascertain whether there were significant differences in dental condition among school children living in different areas of the country, and whether such differences, if they existed, could be related to differences in the dietary intake of the children.

Two thousand children, divided into three age groups—5 to 6 years, 7 to 8 years, and 12 to 13

years—were examined. The areas to be covered were those used for a National Nutrition Survey. The sample number was divided into four approximately equal parts—500 children from Dublin County, 500 from other town areas, 600 from rural areas and 400 from congested districts.

The main facts revealed by the survey are as follows:

1. The incidence of dental caries among school children is high. The attention paid to the filling of teeth is negligible. Little is done to arrest the progress of decay.

2. The incidence of dental caries among children in different areas does not, in general, show any significant difference.

3. The dental condition of school children living in the congested districts, where the National Nutrition Survey had indicated that the dietaries were simple and plain, was only slightly better than that in the samples from the other areas included in the survey.

4. It is not possible to associate the incidence of dental caries with the intake of certain foods in the different areas as ascertained by the National Nutrition Survey.

The Harvard Dental Public Health Unit

James M. Dunning. *Harvard D. Alumni Bul.*
17:14-15, 27 Oct. 1957

In an effort to provide advice and assistance on public health dentistry to those involved in the more than 200 independent local dental health programs within the Commonwealth, the Massachusetts Department of Public Health offered a grant to Harvard in December 1956 to establish a Dental Public Health Unit. Most of the dentists employed in these local public health programs were untrained in public health. They had come to their posts from private practice. A field was thought to exist both for postgraduate education among these men, and for advisory service.

The chief functions of the unit are: (1) to serve as a consultative body on technical subjects related to dentistry for public health dentists of local community programs; (2) to serve as a diagnostic and treatment resource for referred patients from local public health programs presenting medicodental problems beyond the scope of

local resources, and (3) to serve to develop teaching methods and materials and to conduct seminars for dentists from the local programs in the various phases of preventive medicine and public health.

The grant was accepted and the unit came into being on January 1, 1957, with the author as director. The advisory facilities of the School of Dental Medicine are available, and assistance has been given by staff members of the Harvard School of Public Health.

The major activity during the past academic year has been a seminar course in public health dentistry of ten sessions of two hours each, given between January and June. In the first group of trainees, nine were selected from the group of local public health dentists and dental health directors known to the dental division of the Massachusetts Department of Public Health, and two more came from the Council on Dental Health of the Massachusetts Dental Society. Attendance was excellent. One third of the time of the course was devoted to open discussion. The practical experience of the participants added to the interest of the seminar. The success of the course was sufficient to justify renewal of the grant for the present academic year on a slightly expanded budget. The seminar course is to be repeated, probably on an extended basis with twice as many sessions. Enrollment will be limited to 12, although members of the trial course may attend those sessions which present material beyond the content of the first course.

The increase in budget will finance study of certain public health problems within the Commonwealth, particularly water fluoridation. Two research assistants are touring the state making intensive studies of various communities which have either fluoridated their water or decided not to do so. Certain adjoining pairs of such communities are of particular interest. Other communities worth studying are those which have discontinued fluoridation, which have shown prolonged indecision on the matter, or have registered isolated opposition where surrounding communities were all fluoridating. The goals of the study are "to uncover the factors that account for the voltage fluoridation carries as a public issue" and "to examine the process by which a community arrives at a decision whether or not to treat

the water supply with fluoride." Questions of particular interest are the composition of the leadership of opposing factions, the activity of local dentists and physicians in support of fluoridation, and the intervention of outside organizations. The report of the study should be of great general interest.

Another subject being studied is the measurement of periodontal disease in such simple terms that large-scale surveying will be possible.

There exists a fertile field for postgraduate training in public health dentistry. The subject is taught by few schools throughout the country, and by none in New England. The men who are operating local dental public health programs have had, generally, no training in public health. Last year's seminar shows that these men are eager students and can contribute a lot to their field by pooling their valuable experiences.

363 Marlborough Street, Boston, Mass.

Survey of dental conditions: Qalyub project, Cairo, Egypt

M. G. Wheatcroft and C. R. Klimt.
Internat.A.D.Res.Preprinted Abs. 79
March 21, 1957

An oral survey of 4,324 persons in three villages near Cairo, Egypt, revealed the following dental status: DMF permanent teeth per person, 4.4; def teeth per child, 1.3. Water samples from the survey areas contained from 0.2 to 0.6 ppm of fluoride. Periodontitis was present in 45.6 per cent of all persons examined, and in 86 per cent of those in the age group of 31 to 50 years.

A statistical evaluation revealed the following: angular cheilosis was significantly higher in males (15.8 per cent) than in females (10.6 per cent); asymptomatic enlargement of the parotid glands occurred in 10 per cent of the males and in 6.3 per cent of the females. A significant relationship was found between the occurrence of angular cheilosis and the presence of asymptomatic enlargement of the parotid glands. The percentage of persons with calculus deposits and gingivitis gradually increased through age 51. After age 21, however, the incidence of gingivitis was significantly higher in women than in men.

U.S. Naval Dental School, Bethesda, Md.

Evanston dental caries study.

XVII. Dental caries experience rates associated with boys and girls, white and negro children

I. N. Hill, J. R. Blayney and W. Wolf. *J.A.D.A.* 55:473-482 Oct. 1957

A study was made of the dental caries experience of 7,393 white children and 1,024 negro children 6 to 8 and 12 to 14 years old in Evanston, Ill., in 1946, 1954 and 1955.

In six, seven and eight year old children with permanent and deciduous teeth, the following observations were made:

1. White girls six, seven and eight years old, as a group, had a higher dental caries experience rate in permanent teeth than white boys. The difference was statistically significant.

2. Negro girls six, seven and eight years old, as a group, had a higher dental caries experience rate in permanent teeth than the negro boys. The difference was statistically significant.

3. The white boys six, seven and eight years old, as a group, had a higher dental caries experience rate in permanent teeth than the negro boys. The difference was statistically significant.

4. The white children six, seven and eight years of age, as a group, had a higher dental caries experience rate in permanent teeth than the negro children six, seven and eight years of age as a group. The difference was statistically significant.

5. Although the differences in the dental caries experience rates of the deciduous teeth were neither consistent in their direction, nor statistically significant by individual age groups, the differences for the six, seven and eight year old children as a combined group appeared to be real.

The following observations were made concerning the permanent teeth in 12, 13 and 14 year old children:

1. The white girls, as a group, had a higher dental caries experience rate in permanent teeth than the white boys as a group. The difference was statistically significant.

2. Negro girls 12, 13 and 14 years old, as a group, had a dental caries experience rate in permanent teeth comparable to that of the negro boys.

3. White girls had a greater dental caries experience rate in permanent teeth than the negro

girls. The difference was statistically significant.

4. White boys had a greater dental caries experience rate in permanent teeth than the negro boys. The difference was statistically significant.

5. White children, as a group (boys and girls), had a greater dental caries experience rate in permanent teeth than negro children. The difference was considered statistically significant.

The results parallel those reported in the literature. As the difference in the socioeconomic status of the white and negro races diminishes, it should be of interest to observe whether the difference in caries prevalence rates decreases proportionately.

Zoller Memorial Dental Clinic, University of Chicago, 950 East Fifty-ninth Street, Chicago, Ill.

The dental condition of London school children over a period of seven years

P. M. C. James and Gilbert J. Parfitt. *Brit.D.J.* 103:214-216 Sept. 17, 1957

A previous paper (Parfitt, 1954) described the increase in caries experience occurring in children aged 5 to 11 years between 1950 and 1953. The present investigation ascertains whether this trend was continued in 1954, 1955 and 1956. Between 452 and 659 boys and girls 5 to 11 years old at a London school received a dental examination each year from 1950 to 1956.

The average total number of DMF teeth per year was as follows: 1950, 2.25; 1951, 2.70; 1952, 3.30; 1953, 3.62; 1954, 3.51; 1955, 3.99, and 1956, 4.42. During the seven years 1950 to 1956, the dental condition of children 5 to 11 years old deteriorated. During the same period the number of caries-free children per hundred declined, indicating that not only is the amount of caries per child increasing, but that more children have caries. In 1950, 22.2 per cent of the new school entries at five years were caries-free; in 1956, only one five year old child out of 70 children was caries-free. The DMF rate for permanent teeth at ten plus years has risen from an average of 2.25 in 1950 to 4.42 in 1956. Girls had a higher caries rate in permanent teeth than boys of the same age.

Royal Dental Hospital, University of London, London, England

Early detection of caries in children by means of bitewing roentgenograms

(Wczesne wykrywanie próchnicy u dzieci za pomocą skrzydłowych zdjęć rentgenowskich)

Zofia Raczew. *Czas.stomat.* 10:321-325 June 1957

Because of the wealth of information supplied by interproximal bitewing roentgenography, this technic is mainly used at the Dental Clinic of the University of Warsaw, Poland, for the detection of initial caries in tooth crowns, atrophic alterations in the alveolar septums and destructive changes in the pulp of children.

In clinical examination of about 24,000 school children from 6 to 14 years old, 22,000 proximal cavities were detected. By utilizing bitewing roentgenography, an additional 38,000 proximal cavities were discovered.

It appears obvious that almost 60 per cent of these proximal cavities would have remained undiscovered in the early stage and, therefore, without treatment, if there had not been bitewing roentgenography.

Kliniki Stomatologii, Warsaw, Poland

Influence of fats on fermentation of sugar

Tormod Mörch. *Odont.Tskr.* 65:213-219 June 1957

Several animal feeding experiments have shown that the presence of fat in a cariogenic diet decreases the incidence of caries. In this study, experiments were carried out to test the assumption that the caries-reducing effect of fats in a cariogenic diet to some extent depends on their influence on the carbohydrate fermentation. It was further assumed that this influence may either be a direct influence on the enzymatic system or it may depend on a film of fat around the carbohydrate particles protecting them from penetration by mouth fluids.

The experiments were performed *in vitro*, using saliva samples containing sugar mixed with bacteria and soft matter from the teeth. A saliva sample of 13 ml. was collected from one individual during toothbrushing and toothpicking. The sample was divided into four portions of 3 ml. in

small test glasses. To each small sample 0.5 Gm. of sugar was added. One sample was used as a control. The second sample contained 0.5 Gm. of fat and the third sample contained 1 Gm. of fat. The fourth sample was used for immediate titrimetric determination of the amount of titrable fatty acids present in 1 Gm. of the fat used. The fats employed were arachis oil, hydrogenated arachis oil, margarine, butter and lard.

Before addition to the saliva samples, sugar and fat were mixed and stirred. The rate of sugar fermentation was calculated by recording the drop in pH and by determining the total amount of acids produced during four hours of incubation.

Under the conditions in the experiments, the fats used had no apparent effect on the fermentation of sugar. Thus, neither an influence of the fats on the enzymatic system nor a protection of the carbohydrate particles by a fatty film could be observed. The experimental conditions, however, do not justify definite conclusions. No difference could be seen between the effect of animal and vegetable fats.

Josefinegaten 32, Oslo, Norway

Three years of fluoridation in the city of Girardot 1953-1956

(Tres años de fluorización en la ciudad de Girardot 1953-1956)

Arturo Ocampo Alvarez. *Salubridad, Colombia* 2:85-90 April-Sept. 1956

Colombia was the first South American country to use water fluoridation in its battle against dental caries. In the city of Girardot, a water fluoridation plant was installed in 1953, after a physical and chemical study of its water supply and examination of 4,000 children to establish the incidence of dental caries.

By 1956 the results obtained were gratifying. Caries reduction was 41.56 per cent, which is good considering that fluoridation had been in operation for only three years. In 1953 only 64.97 per cent of the children used a toothbrush for dental hygiene. This figure rose to 84.53 per cent in 1956, a 20 per cent increase.

Oral hygiene improved noticeably. In 1953, 7.17 per cent of the children had good oral hy-

giene, but by 1956 this figure rose to 84.53 per cent, an increase of 77.36 per cent. It is possible that the caries reduction observed is due not only to the water fluoridation but also to the improvement of the children's oral hygiene.

The DMF index on molars which was 69.36 per cent in 1953 dropped to 42.24 per cent in 1956.

Another benefit was that the parents showed much more interest in the dental health of their children than they had shown before.

Continuous recording of fluoride in water

Franz J. Maier and Ervin Bellack.

Am.J.Pub.Health 47:1296-1304 Oct. 1957

A continuous record of the fluoride concentration in water, provided by an automatic analyzer, would be of value to water utilities. Such a record not only monitors the operation of the fluoride-feeding system but provides a graphic history of the fluoride concentration at any point in the plant or distribution system. The recording mechanism also can be used as the primary device for actuating the fluoride-feeding mechanism. In this way a constant fluoride level would be maintained automatically in the treated water regardless of variations in water consumption, fluoride level in the untreated water, and purity of the fluoride compounds.

The design and operation of two devices that will record the total fluorides in water are described.

Conductivity measurement is one of several possible principles that can be used in such a monitoring and recording system. This principle is now employed to measure the quantity of fluoride added to water at Salem-Beverly, Mass. Two conductivity cells are used; one measures the conductivity of the water before fluoridation and the other after the addition of fluorides. The difference in conductivity is then expressed in terms of the added fluoride ion by a recording apparatus.

The measurement of absorbencies is another principle utilized for the continuous recording of fluorides in water. With the development of an almost instantaneous colorimetric method for determining fluorides in water, the use of a color reagent and flow colorimeter became a possibility. The Eriochrome Cyanine R (ECR) colorimetric

reagent method produces a color which may be interpreted in terms of fluoride ion concentrations within seconds after the addition of reagents. Its use permits the employment of a flow colorimeter to measure fluoride in a virtually constantly flowing stream of water. The design of the apparatus for achieving this end is based on continuously metering the water sample and two reagents, mixing the three ingredients, and passing the mixture through an absorption cell in a photometric device. The relative absorbence or transmission of light through the cell can then be relayed to a recorder which plots these figures in terms of fluoride concentrations.

The ECR apparatus, constructed by the authors, probably can be simplified and made more sensitive, attractively housed and designed, and constructed so as to require less attention in operation. Some of these objectives, it is hoped, will be accomplished in the near future.

Division of Dental Public Health, Public Health Service, Bethesda, Md.

Study on the prevalence of caries in preschool, school children and adult groups of the town of Dávila

(Estudio sobre prevalencia de caries en sectores preescolares, escolares y adultos de Población Dávila)

Miguelina Serrano C. *Odont.chilena* 5:938-942 July-Oct. 1956

The prevalence of dental caries in Dávila was studied. The DMF index was used.

The subjects in the study were divided into three groups: preschool, school, and adult. The preschool group was composed of 222 children age 3 to 6; the school group contained 716 children age 7 to 14, and the adult group contained 237 persons age 15 years or more. Caries was defined as a condition characterized by decalcification of the inorganic part of calcified tissues, accompanied or followed by disintegration of their organic substance. Furrows, fissures and definite spots not accompanied by a break in continuity were disregarded.

The data obtained showed the following: (1) the incidence of caries increased progressively with age in both sexes, rising from an average

of 5.65 in the preschool group to 7.59 in the school group and still higher to 17.29 in adults; (2) the extent of the damage caused by the caries was enormous and the number of teeth that had been filled was low in comparison with the number of those that needed filling, in both sexes and at all ages; and (3) caries was present in 93.7 per cent of the children aged 3 to 15 years, and in 100 per cent of the adults.

A reduction in the high rate of dental caries revealed by this study can be brought about only by the vigorous application of all known methods of improving dental health, such as fluoridation of drinking water, topical fluoride treatment, early dental care and health education.

Depto. Odontológico Servicio Nacional, Salud, Chile

A new approach to the topical application of fluorides in children, with results at the end of two years

Charles W. Gish, Charles L. Howell and Joseph C. Muhler.

J.Den.Children 24:194-196 Sept. 1957

A study was undertaken to determine if a single application of a freshly prepared 8 per cent solution of stannous fluoride once each year was significantly more effective in reducing dental caries in children than a series of four applications of a 2 per cent sodium fluoride solution once every three years.

The methods, application technic, clinical procedure and the results at the end of one year have been described in a previous paper. At the end of two years the children in Group I who received a single application per year of an 8 per cent solution of stannous fluoride had 32 per cent fewer DMF teeth and 21 per cent fewer DMF surfaces than those in Group II who received the series of four applications of a 2 per cent sodium fluoride solution.

The clinical results indicate a substantial advance in topical fluoride treatment in preventive dentistry, resulting in a saving in clinical time and cost, greater convenience for the patient and parents, and an increase in effectiveness.

Indiana State Board of Health, Indianapolis, Ind.

Anesthesia
and analgesia

**Survey of sensitivity of skin
to Primacaine hydrochloride**

Marshall I. Nevin and Elias Epstein.
Anesth. & Analg. 36:42-43 May-June 1957

Since the introduction of procaine hydrochloride, dentists and physicians who use it have been troubled by procaine dermatitis. Anesthetics in general seem to have a more than average tendency to produce dermal sensitization. Although newly synthesized anesthetics do not tend to cause this difficulty, after they have been in use for some time, sensitization appears.

The introduction of metabutoxycaine (Primacaine) hydrochloride in 1955 presented an opportunity to determine its tendency to cross sensitization.

One hundred and fifty-two dentists, each with a clinical history of sensitivity to local anesthetics, were supplied with instructions for conducting patch and intradermal wheal tests for sensitivity to metabutoxycaine hydrochloride and were asked to supply details of the results. Replies were received from 84. Of the 84, 21 (25 per cent) indicated allergy to every anesthetic ever used. Of the 84, 62 performed and reported on intradermal wheal tests with 0.1 cc. of metabutoxycaine hydrochloride solution. Negative responses were reported by 57 (92 per cent). The cross sensitization between metabutoxycaine hydrochloride and metabutethamine (Unacaine), also a meta-amino benzoate compound, was evident in two dentists (3 per cent).

Metabutoxycaine hydrochloride appears to possess a low index of sensitization as compared with procaine, metabutethamine, butethamine, propoxycaine hydrochloride, tetracaine hydrochloride, lidocaine hydrochloride and piperocaine hydrochloride.

Novocol Chemical Manufacturing Company, Brooklyn, N.Y.

**Dental trial of Carbocaine:
a new local anesthetic**

J. M. Mumford and T. Cecil Gray. *Brit. J. Anaesth.* 29:210-216 May 1957

The blind testing method was used to compare a new local anesthetic, *d*-1-N-methylpipercolic acid 2,6-dimethylanilide (Carbocaine), with lidocaine. Epinephrine was not added to either anesthetic.

For regional anesthesia, 2.3 ml. was given; for infiltration anesthesia, 1.7 ml. The drugs tested were 2 per cent Carbocaine and 2 per cent lidocaine. The male and female patients, ranging in age from 11 years upward, were undergoing treatment in the department of operative dentistry at the University of Liverpool. An injection was regarded as successful if anesthesia occurred within ten minutes. The pH of the Carbocaine solution was 6.5, that of the lidocaine, 5.4.

Of the 120 injections of lidocaine, 48.3 per cent resulted in anesthesia, whereas of 87 injections of Carbocaine, 82.8 per cent were successful. There was no significant difference between the two drugs as to time of onset of anesthesia or as to duration of anesthesia.

The results show that Carbocaine was decidedly superior to lidocaine. Further research on Carbocaine might well prove valuable.

Liverpool Dental Hospital, Liverpool, England

**The use of a new intravenous oxygen
barbiturate 25398 for intravenous anesthesia
(a preliminary report)**

V. K. Stoelting. *Anesth. & Analg.* 36:49-51
May-June 1957

A new oxygen barbiturate, compound 25398 (1 methyl-5 allyl-5-(1 methyl-2 pentynyl) barbituric acid, sodium salt), has been used intravenously in 285 patients to provide anesthesia for a variety of surgical procedures, including dental surgery. The patients were premedicated with morphine sulfate or meperidine hydrochloride in combination with scopolamine hydrochloride or atropine sulfate. The drugs were given one to one and a half hours prior to the beginning of anesthesia. A barbiturate (secobarbital sodium or alphaprodine hydrochloride) was frequently administered

intravenously to patients in the operating room prior to starting the anesthetic.

The drug was administered in a 1 per cent solution using the intermittent injection technic, and also was administered to several patients having prolonged surgical operations, in a 0.1 per cent aqueous solution.

The induction of anesthesia was rapid and complete in all patients. The amount of drug required for induction averaged 70 mg. and ranged from 40 to 220 mg. Hiccoughing occurred in one patient during induction of anesthesia; this complication was relieved easily by deepening the level of anesthesia. Mild laryngospasm occurred in one patient. Administration of additional amounts of compound 25398 relieved the spasm. Apnea occurred in 76 of the 285 patients after the initial injection of the compound. It lasted from two to three minutes; oxygen by positive pressure ventilation was required for relief. The margin between respiration and apnea appears to be narrow. One patient had a decrease in systolic blood pressure of 40 mm. of mercury, and three patients had a drop of 20 mm. of mercury.

One hundred and two patients were maintained on intermittent injections of compound 25398, nitrous oxide and oxygen. The average amount of the drug required for maintenance was 410 mg. and ranged from 50 to 1,800 mg.

All patients exhibited active reflexes in the operating room at the termination of the surgical procedure. The majority were oriented and mentally clear when taken to the recovery room. Thirteen patients retched, with or without nausea and emesis, while still in the operating room.

Compound 25398 was given to 72 patients by continuous intravenous drip in a 0.1 per cent aqueous solution. Patients were easily maintained with this technic.

Anesthesia was induced in 111 patients with compound 25398 and maintained on cyclopropane or ether anesthesia.

The mean dose for induction with compound 25398 is about three times as potent as thiopental sodium and four and a half times as potent as thiamylal sodium. Compound 25398 was utilized about three times as rapidly as thiopental sodium.

Further clinical trial of the drug is indicated.

Indiana University Medical Center, 1100 West Michigan Street, Indianapolis 7, Ind.

Pocket-size resuscitator for emergencies in dental or medical practice

Robert A. Hingson. *Science Digest* 42:67
Oct. 1957

A resuscitator, small enough to fit into the dentist's or physician's pocket, has been introduced recently for use in emergencies where it is essential to restore consciousness, heart beat or arterial blood pressure and oxygen within from three to five minutes. The apparatus can be assembled in a matter of seconds.

In instances of asphyxia, comparatively large quantities of oxygen can be made available immediately by hand pressure on the re-breathing bag.

Prior to treatment, an asthmatic or heart patient can administer the oxygen to himself as needed.

The 2 pound device originally was used as a small anesthesia machine in minor surgical interventions such as fracture reduction and wound suturing.

University Hospitals, Cleveland, Ohio

A method to allay pain

Ralph H. Brodsky. *Harvard D.Alumni Bul.*
17:25-26 Oct. 1957

The effects of various colors and color combinations on dental patients have been studied. The dark blues, browns, purples and blacks seem to have a tranquilizing effect on most people. The best results have been obtained by inserting a thin transilluminating bulb into a small antique blue glass bottle, to produce a subdued light of eerie quality.

The technic may produce a mild form of hypnosis. The patient at no time is put into a trance. Rather, he is in a state in which the dentist can drill, give injections or perform surgery, with the patient being relatively unmindful of what is being done. The element of fear has been dissociated in his mind, and the dentist is able to complete his work provided the patient is cooperative and is able to concentrate. If the patient is only partially cooperative, only a partial result will be obtained.

Sedatives or tranquilizers may be used when indicated. The patient is told what is to happen, and is asked to concentrate with a fixed focus on the blue light source. It may be necessary to repeat this admonition several times in a subdued voice. Any further requests to the patient, such as to open the mouth widely, should be uttered quietly. The patient must respect the dentist and cooperate. At this stage, a topical or block anesthetic may be used. The patient may have to be reminded occasionally to keep his attention fixed on the light source.

The length of the operation or the age of the patient does not modify the effectiveness of this procedure. Additional sources of blue light may be placed strategically to help make concentration easier.

Three case reports, involving a 58 year old man, a child, and an emotionally disturbed middle-aged woman, illustrate the successful use of the blue light.

Not all patients respond to the technic, but in most instances the results have well justified its use. More research in this field may produce a standardized method for allaying a patient's fears and apprehensions of dental pain.

14 East Eighty-first Street, New York, N.Y.

Pain control in dentistry for children

Jerome L. Fechtner. *J.Den.Children* 24:163-173 Sept. 1957

This study was undertaken to test and evaluate pain control in children's dentistry. Analgesia, a valuable adjunct of pain control in children's dentistry, is not offered as a panacea but as a valuable adjunct with advantages to both patient and dentist.

Some 14,632 administrations of nitrous oxide-oxygen analgesia were given to 1,873 children from 2 to 16 years old. The number of administrations per child ranged from 1 to 25. Analgesia was considered successful if the dental proce-

dures were efficient, painless and pleasant for both dentist and child. The technic of analgesia aims to produce a feeling of pleasant, lethargic, numb euphoria, in which there is loss of sensibility to pain with little or no loss of consciousness. Some complications of analgesia include nausea, excitability and fear of the physical sensation.

Since analgesia is an early stage of anesthesia, training in general anesthesia is a prerequisite to the successful administration of analgesia. The technic should receive further study in the dental school and should be taught by trained anesthesiologists. Analgesia deserves a place in the armamentarium of the pedodontist.

Of the 14,632 administrations of analgesia evaluated, 14,539 were considered successful (99 per cent).

The following advantages of nitrous oxide-oxygen analgesia are demonstrable:

1. The administration of analgesia is pleasant and painless.
2. Operative procedures proceed normally and easily in all or any quadrants of the mouth.
3. Much work can be accomplished at each visit, thus shortening the length of dental treatment.
4. Analgesia is effective with the fearful, emotionally unstable "problem" child.
5. The child is relaxed and unapprehensive under the effects of analgesia.
6. The child is unaware of the details and procedures, and sometimes has no memory of what has been done for him.
7. The child finds the experience of analgesia pleasant, and looks forward to his next appointment.
8. Analgesia is safe, with no allergies or idiosyncrasies.
9. Recovery is swift and uneventful by the time the child is ready to leave the office.

225 Martine Avenue North, Fanwood, N.J.

Boundary electrophoresis of human parotid saliva

I. Zipkin, E. R. Adamik and H. A. Saroff.
Proc.Soc.Exper.Biol.& Med. 95:69-71 May 1957

The ultraviolet spectrum of human parotid saliva possesses bands characteristic for protein. The present study presents electrophoretic patterns of six samples of parotid saliva from five individuals. The samples were subjected to boundary electrophoresis at pH 8.6 in 0.1 ionic strength veronal buffer.

Five distinct peaks were seen in each instance and two additional peaks appeared as "shoulders" in some patterns. Two of the seven peaks accounted for 75 per cent of the components. The major peak was essentially stationary with a mean mobility of $+0.3 \times 10^{-6} \text{ cm.}^2 \text{ sec.}^{-1}$, and comprised 50 per cent of the components. The fastest moving constituent had a mean mobility of $-4.18 \times 10^{-6} \text{ cm.}^2 \text{ sec.}^{-1} \text{ volt.}^{-1}$

National Institute of Dental Research, Bethesda, Md.

Mineral and protein levels in enamel from human, monkey, and rat molars

Maurice V. Stack. *Odont.Rev* 8:243-247
No. 3, 1957

The physical and chemical properties of enamel from the teeth of laboratory animals have seldom been compared with data on human enamel. Some dental research workers believe that organic components play an important part in enamel caries.

The present study was undertaken to discover whether there are any pronounced quantitative differences between the proportions of some of the organic components of enamel from human, monkey and rat molars.

About 75 to 80 per cent of the enamel from the rhesus monkey and human deciduous dentitions was separated by fluids of a density ranging from 2.85 to 2.95 Gm. per cubic centimeter. The enamel samples from rat molars are mineralized about 1 per cent less.

The organic contents of enamel fractions were calculated from wet-combustion analyses. The enamel fractions from human and monkey teeth were identical. The carbohydrate level in rat enamel was three times that of the enamel of human and monkey teeth. Surface enamel from human teeth has a higher carbohydrate level than that of the rest of the enamel. Rat enamel has a greater surface, in proportion to its volume, than human enamel. The greater organic content of rat enamel may need to be recalled in comparing dental caries in man and rodents. The organic fractions separated for these analyses, however, were present in similar proportions in human, monkey and rat enamels. The caries process, insofar as it involves organic components, may be expected to be similar in all three types.

Medical Research Council, Bristol, England

Hypocalcification of the enamel: investigation of three cases

Einar Hals. *Acta odont.scandinav.* 15:177-198
Aug. 1957

Hereditary enamel hypocalcification (brown teeth) has been described by Ryge (1939), Weinmann and others (1945) and Gustafson and others (1947). The most conspicuous clinical feature is the strong discoloration of the dental crown, the shades of which vary from light brown to dark orange. The enamel cap is not normally developed. It covers certain parts of the crown as a thin coating, and in other parts, usually at the cervix, may be of normal thickness. Areas completely lacking in enamel also may be found. Because of the defective enamel, the crowns often are cone-shaped, with large interproximal spaces. The enamel is fairly soft and porous and often can be scraped off with an excavator.

Observations based on three case histories and an histologic investigation of four teeth are given.

The main interest is concentrated on the organic enamel matrix. After decalcification, the

organic stroma is preserved to a great extent. The difference between the stroma of hypocalcified enamel and that of normal enamel is quantitative rather than qualitative. The interprismatic substance is eosinophilic, in contrast to the prism sheaths and prism bodies. In an impacted cuspid an outer zone of the enamel showed no prism pattern, but a system of fine fibrils. In the same tooth resorption of the enamel by osteoclasts was noted. The process produced canals in the enamel (and the dentin) that in some places showed an apposition of bone tissue. A blood vessel penetrated the enamel. Resorption of enamel also was observed in an erupted molar partly covered by a gingival flap.

The occlusal surfaces of the bicuspid and molars generally were covered by a thick plaque in the enamel beneath which caries could be observed microscopically. The caries in this anomaly does not differ from ordinary enamel caries. Also, in the crown of an impacted cuspid, caries could be observed, obviously due to bacteria that may have reached the crown through some unobservable communication.

The present investigation seems to indicate that caries is more common in this anomaly than hitherto believed.

Norwegian Institute of Dental Research, Josefnegetan 32, Oslo, Norway

Adsorption of surface-active agents by powdered human tooth enamel

G. C. Panepinto, V. J. Richter and W. J. King.
Internat.A.D.Res.Preprinted Abs. 7A
March 21, 1957

An adaptation of an oxidation-reduction technic for determining organic matter was used to determine the adsorption of various organic materials on powdered human tooth enamel. A study of various groups of surface-active agents was made to observe their tendency to adsorb to the enamel surfaces, and a further study was made of their ability to reduce enamel solubility in acid.

The results of these tests show that some of the higher acylated amino acid salts adsorb well and also give good reductions in enamel solubility tests. Examples of such salts are sodium N-palmitoyl sarcosinate, sodium N-myristoyl sar-

cosinate and sodium N-palmitoyl glycine. Some compounds adsorb well but are ineffective in reducing enamel solubility. Examples of this type are sodium N-lauroyl glycine, sodium p-(1-methyl hexadecyl) benzene sulfonate, sodium cetyl sulfate and sodium palmitate.

Of unknown significance was the observation that certain compounds appear to reduce the organic content of the enamel. Examples of materials exhibiting this effect are sodium coconut monoglyceride sulfonate, sodium lauryl sulfate and sodium N-lauryl amino methan sulfonate. These compounds are ineffective in reducing enamel solubility.

Colgate-Palmolive Co., Jersey City, N.J.

Influence of basal metabolism on the chemical properties of saliva (Einflüsse des Gesamtstoffwechsels auf die chemischen Eigenschaften des Speichels)

H. Hafer. *Zschr.physiol.Med.* 1:91-98 April 1957

The relation existing between basal metabolism and the quantity and the chemical properties of the human saliva was investigated.

The undisturbed flow of saliva depends on the regular blood supply to the salivary glands. The secretion of saliva seems to run parallel to the secretion of gastric juice.

The chemical properties of salivary mucin have not been sufficiently explored to permit an evaluation of the relation to the metabolism of mucopolysaccharides. Chloride and diastase seem to have a certain similarity as both unquestionably are influenced by diseases. No similarity exists, however, between the chloride contents in saliva and in gastric juice.

The buffering power in saliva can be defined as a function of the bicarbonate reserve of the extracellular space, and, therefore, as a product of the carbonic-anhydrase activity.

Three caries-resistant and two caries-susceptible persons were examined after small doses of ammonia were administered orally from 4 days to 75 days prior to investigation.

The caries-resistant persons immediately showed an increase in buffering power against acids in the saliva, accompanied by a retention of urine.

The caries-susceptible persons showed a gradual loss of buffering power in the saliva, and a slightly increased activity of the carbonic anhydrase in the urine.

It may be concluded that caries-resistant persons respond readily to comparatively small acidogenic influences resulting from food intake, from daily work or from emotional upsets with an overcompensation in carbon-argon-hydrogen activity. Caries-susceptible persons, however, show only an insufficient compensation for these influences.

The metabolism of thiamine and the contents of thiocyanate in the saliva will be investigated at a later date.

Bebelstrasse 45, Mainz/Bretzenheim, Germany

Chemical content of salivary calculi

(K voprosu o khimicheskom sostave sliunyngh kamnei)

M. H. Mighailov. *Stomat., Moscow* 36:3:43-46 May-June 1957

Spectroanalysis was used to determine the composition of salivary calculi. Spectroscopy has been applied widely in all branches of science but is not used enough in medicine. It is preferred to chemical methods as particularly suitable for metal analysis when the concentrations of the elements are small.

The technic was as follows: A salivary calculus weighing 10 to 20 mg. was reduced to powder in an agate mortar, placed in the carbon electrode cavity and excited by employing the electric arc. The spectrum was examined with a quartz spectrograph ISP-22 to investigate the ultraviolet parts and with a glass prism spectrograph ISP-52 to record the near-infrared spectral region. Spectrograms were taken by two arrangements at one time to determine a larger amount of elements by their most sensitive lines.

In the ultraviolet part of the spectrum the following elements were found: phosphorus, calcium, magnesium, silicon, manganese, iron, lead, cobalt, nickel, silver, cadmium, chromium, antimony, zinc, barium and copper.

In the near-infrared spectrum alkali elements potassium and sodium were found.

The investigations of 20 salivary calculi have shown that the basic elements of calculi are calcium, magnesium and phosphorus. In each sample considerable amounts of sodium, potassium and lead were found.

The quantitative determination was obtained by semiquantitative method, preparing ethyl solutions with the determined trace elements in concentrations of 1, 0.5, 0.1 and 0.01 per cent. The percentage of trace elements in salivary glands never exceeded 0.01 per cent. Determinations of iron revealed 4.10^{-3} per cent, and of silicon 1.10^{-3} per cent.

The relative content of the basic elements in salivary calculi (calcium, phosphorus, magnesium) could not be determined by spectroscopy. Chemical analysis revealed phosphorus values ranging from 12 to 16 per cent, calcium from 32 to 36 per cent and magnesium from 3.0 to 3.5 per cent.

The calcium percentage was determined by Dewar's method, the phosphorus percentage by the method of Briggs, and the magnesium percentage by colorimeter.

Although the results from these investigations are not conclusive, the discovery of the active element magnesium, and copper and lead, rare in the tissues of the body, deserves attention.

Medghis, Petrovka 12, Moscow, U.S.S.R.

Studies on salivary calculus.

I. Histochemical and chemical investigations of supra- and subgingival calculus

Irwin D. Mandel and Barnet M. Levy. *Oral Surg., Oral Med. & Oral Path.* 10:874-884 Aug. 1957

In view of the development of a large amount of literature on the role of lipid and carbohydrate-protein in calcification, a study was undertaken to investigate salivary calculus for the presence of these constituents. Following is a summary of the results:

1. Lipid has been demonstrated in supragingival calculus by chemical and histochemical means. Theoretically the lipid may take part in the calcification process.

2. Carbohydrate-protein has been demonstrated in supragingival calculus by chemical

and histochemical methods, and in subgingival calculus by histochemical means. Carbohydrate-protein has been associated with calcification in urinary calculus and in other ectopic calcifications, and may play a similar role in salivary calculus.

3. Salivary calculus contains an amorphous background substance which resembles, to some extent, the ground substance of cartilage and bone. Neither the source of this background substance nor its role in calcification is known.

4. The observation by Naeslund and others of the predominantly filamentous bacterial nature of the calculus matrix has been confirmed. Food debris, epithelial and inflammatory cells and so forth make up only a small fraction of the stroma.

5. Subgingival calculus appears to be attached to root surfaces by means of the cuticle, by growth into regions formerly occupied by Sharpey's fibers, and by mechanical locking in regions of breaks and tears in cementum and dentin.

6. Root surfaces incisal to the epithelial attachment invariably are covered by bacterial mats continuous with the matting overlying the calculus, and closely resemble bacterial plaque associated with caries.

Columbia University School of Dental and Oral Surgery, 630 West 168th Street, New York, N.Y.

An examination of dentine for A and B blood-group antigens by the mixed agglutination technique

Ivor R. H. Kramer. *Proc. Roy. Soc. Med.* 50:677-678 Sept. 1957

By a recently developed technic (Coombs and Bedford, 1955), blood-group antigens have been demonstrated in blood platelets, in adult epidermal cells and in fetal epidermal cells. The presence of these substances in cells other than erythrocytes may have application to problems in

fields as varied as tissue grafting, the determination of fetal blood group, and in forensic medicine.

A simple modification of the mixed agglutination technic was used in an effort to demonstrate A and B blood-group antigens in the dentin of recently extracted human carious and noncarious teeth. These substances could not be demonstrated in dentin.

8, *Westhay Gardens, East Sheen, London S.W. 14, England*

Calcium content in sound and in carious teeth

(Soderzhanie kaltsiia v emali zdorovykh zubov i zubov s anchalnoi stadiiei kariesa)

N. V. Nikolaeva. *Stomat., Moscow* 36:2:10-12 March-April 1957

The opinion held by many authors that dental caries starts with decalcification of the enamel is questionable.

To obtain new experimental data, a new method was employed to determine the calcium content in the enamel of teeth.

Eighty molars and bicusps extracted from cadavers were studied. The enamel from carious, pre-carious and sound teeth was removed with burs, under a magnifying glass. Also, ten teeth with white carious spots were analyzed. The calcium was estimated by the method of Dewar.

The data show that there is no considerable difference in the calcium content of carious, pre-carious and sound teeth. Compared to the calcium content of the enamel of sound teeth, the carious enamel had 4 per cent less, the pre-carious enamel 2.3 per cent less, and the enamel from white carious spots 2.8 per cent less calcium.

The findings prove that there is no significant decrease of calcium in the early carious enamel and that the disturbance of calcium metabolism does not play a leading role in tooth decay.

Medghis, Petrovka 12, Moscow, U.S.S.R.

Dental chair lounge

Jerome B. Albert. *J.Hypnosis & Psychol.Den.*
1:24-25 Oct. 1957

The author has designed a support for the legs which converts a dental chair to a lounge. The seat, back rest, head rest and arm rests have been reupholstered. The bottom section rests on tracks that allow it to slide to and away from the seat, to permit unhindered entrance into the chair. After the patient has been seated, the lower section can be slid easily under the legs.

Many patients, on being seated, close their eyes to convey the sensation of complete rest. At this point it is easy to discuss the subject of relaxation,



Figure 1 After patient is seated the low section can be slid comfortably under the legs



Figure 2 Seat, back rest, head rest and arm rest have been reupholstered but otherwise are unchanged

Generally, a patient with his feet flat on the foot rest of a dental chair is not comfortable. Knees tend to fall outward. To prevent this, the patient crosses his ankles or crosses his legs. This posture hampers circulation and involves balancing on one foot. It is generally found to be uncomfortable by the patient.

The dental chair as modified with its adjustable leg support adapts to accommodate patients of all sizes, from small children to men six feet four inches tall. As the lower support is slid away, a foot rest is uncovered that is useful for the young child.

Since the new chair has been installed in the author's office, he has utilized his dental stool. The chair is not pumped up when the patient is seated, so that the dentist must sit on the stool. When the work is finished, the patient is not lowered in the chair. Instead, he pushes the leg support forward and disengages himself, after having enjoyed a relaxing experience.

19 Garfield Place, Cincinnati, Ohio

Past and present views of man's specializations

Adolph H. Schultz. *Irish J.M.Sc.* No. 380:341-356
Aug. 1957

Specializations are features which have developed in only one species in which they have become constant qualitative characteristics. Many a condition, formerly claimed as a specialization of man, has later been shown to be distinctive merely in its average and to partly overlap in its range of variations with the ranges of the corresponding condition in one or more other primates.

Among the many human specializations which have been regarded at one time or another as being of greatest significance, the supposed lack of the intermaxillary bones became particularly famous because Goethe was believed to have discovered them in man. Actually, the ontogenetically early disappearance of the facial intermaxillary sutures is no more important a specialization of man than is the prenatal closure of the inter-nasal suture in macaques and most chimpanzees or that other specialization of the intermaxillary bones in snub-nosed monkeys in which these bones frequently encircle the nasal aperture and suppress the nasal bones in varying degrees.

In many mammals, including the prosimian primates, the mandibular halves never become united by bone at their median symphysis. In all simian primates there has appeared the ontogenetic innovation of bony fusion between the right and left lower jaws, occurring some time after birth. The ages at which this fusion is completed still show considerable differences, being comparatively late in some New World monkeys and in the African apes, whereas fusion occurs especially early in man and the Asiatic apes.

In regard to the sequence of eruption of the permanent teeth, there has developed a striking change in recent man. In tree shrews and in the primitive platyrrhine *Aotes*, all permanent molars appear before any of the deciduous teeth have become replaced. Among other prosimians, monkeys and apes the process of replacing the delicate deciduous teeth with the more durable permanent teeth has gained precedence in varying degrees, particularly in those forms which grow rather slowly. In the majority of monkeys, all apes and, so far as is known, in fossil man and even in

Bushmen, the second molar has shifted to fourth place in the sequence of eruption and the third molar even to second last or last place. In at least the white race of today the second and third molars are not added to the permanent dentition until all the deciduous teeth have been replaced, and even the first molars have frequently shifted to second place. This recent ontogenetic specialization of man most likely is connected with the enormous prolongation of the period during which man's deciduous teeth have to function even after the permanent teeth have gained priority.

Two centuries ago Linnaeus assigned man a place in the animal kingdom based on the characters man had in common with certain other mammals. For over a hundred years his successors tried to remove man from any close proximity to animals on the ground of one or another of his specializations. After Darwin had introduced the concept of common descent and the mutability of species through specialization, man was safely returned in the order of primates.

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Exodus to suburbia

Joel Friedman. *New York J.Den.* 27:293-296
Oct. 1957

The movement of dentists to the suburbs reflects the accelerating decentralization of the population in all the large cities of the United States. Why does a dentist prefer a professional and home life in a suburban community? He likes the sense of belonging, the pleasanter social living, the greater emphasis on the family unit. He likes his practice to consist of friends and neighbors, and scorns the impersonal relationships of the city practitioner.

The dentist who dwells and practices in the city, on the other hand, values the greater cultural and educational opportunities.

Recent New York State census figures reveal the rate of exodus of dentists to Nassau, Suffolk and Westchester. From 1950 to 1957, the population of Nassau County increased by 505,310 (75 per cent). Membership in the Tenth District Dental Society from Nassau grew from 388 in

1950 to 688 in 1957, a 77 per cent increase. During the same years, the population of Suffolk County increased by 252,643 (91 per cent), while the number of dentists increased by 104 (91 per cent). The population of Westchester County increased by 122,773 (19.5 per cent) while the number of dentists increased by 135 (20.5 per cent). Thus, the percentage increase in the number of dentists in the suburban counties has almost exactly paralleled the percentage increase in the population of these counties.

The figures on population growth indicate that suburbia is here to stay. New highways and increased speed limits will help extend New York City's suburbs from the present 40-mile radius to a radius of 50 or even 60 miles.

As the towns become more densely settled, they will become urbanized. The per capita need for dentists in the outer fringe counties remains as great as it was before 1946.

The greater uniformity of social and economic patterns in suburbia provides an easier yardstick for the dentist assaying his plans than for one interested in an urban location.

499 Lincoln Place, Brooklyn 38, N.Y.

Dental incident rate in parachuting

Robert F. Weber and Robert P. Moss.
U.S. Armed Forces M.J. 8:1363-1365 Sept. 1957

The incidence of dental injuries and losses sustained in 178,672 parachute jumps was as follows: four complete and four partial dentures lost; two complete and one partial dentures broken; three natural teeth broken; one mandible fractured, and three soft tissue injuries—one caused by biting the tongue and two caused by equipment webbing which forced soft tissue against the teeth.

The rate and extent of dental injuries caused by parachute jumps is slight—about 0.01 per cent of the completed jumps—and of no particular significance in relation to the nature of the hazardous duty performed. There appears to be no correlation between an individual's parachuting experience and his susceptibility to a dental accident.

About 8 per cent of the airborne troops at Fort Bragg, N. C., have some type of prosthetic appli-

ance. It is recommended that these appliances be retained in place while jumps are being made, if only to aid in supporting the soft and hard dental structures. No special consideration appears to be warranted from the dental standpoint for personnel on airborne status, other than routine dental care.

82d Airborne Division, Fort Bragg, N.C.

Fusiforms in the infant mouth

Valerie Hurst. *J.D.Res.* 36:513-515 Aug. 1957

Although it has been asserted that anaerobic organisms such as fusiform bacteria, spirochetes and the ill-defined *Leptothrix* group make their first appearance with the development of the gingival crevice, data in the literature are hardly sufficient to justify such assertions.

The mouths of 69 babies between one day and eight months old were examined for fusiform bacteria. Gram-negative rods and filaments, believed to be fusiform bacteria were cultivated almost invariably from the mouths of babies two to five months old, and sometimes from younger babies, including newborn infants.

Typical anaerobic colonies of fusiform bacteria were isolated from the mouths of 11 of 18 babies (58 per cent) without dentition, as well as from babies with teeth.

The gingival crevice is not an essential habitat for the oral fusiform bacteria, as stated in the literature.

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Discoloration of teeth by metallic ions

Sally Isaac and Finn Brudevold.
J.D.Res. 36:753-758 Oct. 1957

Traces of the elements—copper, iron, fluoride, manganese, silicon, silver and tin—are present in tooth enamel. Some of these elements may be associated with tooth discoloration, since their sulfides are brown or black, and in the oral cavity there exists ample opportunity for the production of these sulfides from food and saliva.

The crown and root surfaces of 12 intact extracted bicusps were treated with solutions of

cupric sulfate, ferric nitrate, stannous chloride, silver nitrate, mercuric chloride and lead nitrate, and subsequently exposed to a medium containing sulfur.

The formation of a dark metallic sulfide in each instance indicated that all the metallic cations were taken up by the tooth structure.

The degree of discoloration gauged by inspection was substantiated by quantitative readings taken with a photometer which measured directly in foot lamberts the amount of light reflected from a given surface.

The degree of discoloration was affected by the pH of the solutions used and was generally more pronounced on the root surfaces than on the crowns. Areas which had been pre-etched showed a greater tendency toward pronounced discoloration.

Eastman Dental Dispensary, Rochester, N.Y.

Dentistry within the National Health Service

L. E. Balding. *Brit.D.J.* 103:138-140
Aug. 20, 1957

The General Dental Service within Britain's National Health Service has brought dentistry to a large number of people who, prior to 1948, seldom visited a dentist except for emergency treatment. In 1956, out of a population of about fifty million persons, more than ten million courses of treatment were completed; many patients had more than one course of treatment. This figure of ten million does not include the treatments given school children through the school dental service or treatments given adults in hospitals, the armed forces or from other government services.

Some fundamental errors were made in introducing the General Dental Service in July 1948. The greatest mistake was in allowing the nation's health to be mixed up with politics. Toward the end of World War II, everyone in the country was agreed that when peace was achieved there must be no return to the soul-destroying mass unemployment which followed World War I and lasted almost throughout the interwar period. A committee headed by Lord Beveridge made widespread recommendations for what has since become known as the Welfare State. A comprehen-

sive health service, free to all, was one of these recommendations. The public expected and almost demanded that such a service should be introduced. Although Lord Beveridge had recognized the shortage of dental manpower, the newly elected government, acting on the advice of another special committee under Lord Teviot, decided to include free dentistry for all within the National Health Service.

The British Dental Association did not agree. It suggested that the first essential was to expand the existing school dental service. In the political atmosphere then prevailing, the dental profession was promptly labeled reactionary and obstructive, and its advice was disregarded.

The government completely underestimated the demand for dental treatment and the cost of such treatment. It estimated that the cost of treatment for the first nine months would be 7 million pounds—in fact it was 18 million pounds. For the following financial year the estimate was 28 million pounds but the cost was 42 million pounds.

When the economic barrier to dental service was removed in July 1948, the public rush for dentistry began, particularly among those who wore dentures. The profession was overwhelmed with work. Dentists worked to all hours of the day and night, and often seven days a week. Waiting rooms overflowed and queues formed in the street outside. Technicians, too, were unable to deal with the work sent them by the profession, so that once a dentist had taken impressions for a patient, months might pass before the new dentures could be inserted. The cost to the country mounted alarmingly. The government had to save its face and it used the dental profession as a scapegoat. Within six months the fees paid by the state had been reduced; within a further six months they had been reduced again, and in less than another year they had been reduced for a third time. In the nine years of the Health Service there have been nine sets of government regulations which have fundamentally altered the basis of a dentist's income, and only the two latest ones have altered it upwards.

Within a year, disaster had overtaken the school dental service; some 25 per cent of the school dentists had resigned to start up on their own in the General Dental Service.

By 1951 the government could no longer pre-

tend that free dental service for everybody was economically possible or, considering the shortage of dentists, in the best interests of the nation. A change was made whereby a patient paid about 50 per cent of the cost of a denture. A year later, a further change was made whereby an adult patient paid the first \$2.80 toward the cost of treatment in addition to the 50 per cent charge toward dentures.

Despite the strongest urging from the profession, no government until recently has considered trying to relieve the position by means of a campaign of dental health education.

The present state of affairs could have been avoided. The Health Service was introduced at the wrong time, when the political atmosphere was unfavorable for cool thought. Such a service should be introduced in a calm political atmosphere when reason and judgment can be given due weight. The public should not have been promised more benefits than the country could afford, or more than the limited dental profession could provide. An all-party conference should have decided how much a year could be spent on dentistry and the profession should have been called in for its advice on the best way to expend this money with the greatest benefit to the dental health of the nation.

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The last days of Sigmund Freud

Ernest Jones. *Time* 70:71-77 Oct. 14, 1957

Just before his sixty-seventh birthday, Sigmund Freud, suffering from "leukoplakia," appeared at the clinic of the Vienna rhinologist Marcus Hayek. The major symptoms were white, thickened, hard but smooth patches inside the oral cavity on the mucous membranes of the cheeks, gingivae, tongue and jaws. Similar spots often occur in heavy smokers and may become malignant.

The diagnosis and prognosis were unfavorable: the growth was cancerous. The test incision was followed by severe hemorrhage.

Freud was not told that the histologic examination of the removed tissue had revealed the presence of cancer, although additional surgical

intervention was required for "an unmistakably malignant ulcer in the hard palate which had invaded the upper part of the mandible and the cheeks."

First a carotid artery was tied off and the already suspiciously enlarged glands beneath the mandible were removed. In the second stage, the lips and cheeks were opened and the entire mandible with the right side of the palate removed. After this stage, the nasal fossa and the mouth formed one cavity. These frightful operations were performed under local anesthesia.

To make the functions of speech and mastication possible, Freud had to wear an especially constructed "huge prosthesis," probably a combination of complete lower denture and obturator. This appliance was such a horror that Freud and his family nicknamed it "the monster." The appliance was painful to wear and difficult to insert or to remove. In one nightmare scene, neither Freud nor his physician was able to insert it, and the oral surgeon who designed it had to be called. When the monster fitted tightly enough to fulfill its purpose, it caused recurring sores. When it was comfortably loose, Freud had to hold his thumb constantly to his face to keep the monster in position.

Freud's speech became nasal and thick, similar to that of patients with cleft palate. Damage to the eustachian tube and recurring infections impaired also the function of hearing. Hardly intelligible in the German language, Freud could no longer surmount the added difficulties of foreign languages although he had spoken English and French fluently. He explained patiently: "The monster does not speak any foreign language."

Altogether there were 33 surgical interventions and numerous treatments with roentgen and radium rays and diathermy during the next 16 years. Freud himself attempted to tie up the major sperm duct, hoping that a changed hormone production might retard the malignant growth. There is no evidence that this procedure had the desired effect.

Long after the Nazis had attained power in Germany, Freud refused to consider moving from Vienna. Not until the "Anschluss" in 1938, after German stormtroopers had clomped into his apartment, did Freud agree to seek refuge in England.

Two years prior to his flight to London, Freud had undergone two more exceptionally painful operations to remove recurring malignant lesions in the oral cavity. But in England, 82 years old, he had so far recovered as to be able to do four sessions of psychoanalyses daily.

In February 1939, unmistakable malignant neoplasms were found, and the British surgeons labeled them: "inoperable and incurable."

Freud hated to take any kind of drugs, but on September 21, 1939, he asked for the first time for a sedative: "My life now is only a torture and it has no longer any sense." Two days later, Sigmund Freud was dead.

The Plat, Elsted, Midhurst, Sussex, England

**The Faculty of Odontology
of the National University of Colombia
petitions the Council of Directors
of the University** (Los profesores de la
Facultad de Odontología
de la Universidad Nacional se dirigen
al Consejo Directivo de la misma)

Editorial. *Rev. Fed. odont. Colombiana* 7:5-6
March-April 1957

The dental faculty of the National University of Colombia recently held a meeting with the aim of discussing (1) the laws set by the government for the regulation of dental practice in the country and (2) the attitude of the authorities of the University toward these laws.

A petition was sent by the Faculty of Odontology to the Council of Directors of the University pointing out the facts and requesting the intervention of the Council for possible restoration of the fundamental principles of the University and an opinion on the attitude of the authorities of the University with regard to the laws.

Law no. 124 of 1954 granted the right of dental practice to practical dentists who had never had university training. The Board of Directors of the National University endorsed that law. Law no. 3,134 was passed in December 1956; it made the licensing for dental practice a function of the Ministry of Public Health, taking this function away from the National University. One of the clauses of that law reads as follows: "The issuing of licenses for dental practice should be exclu-

sively a function of the Ministry of Public Health." That clause is attributed in the test of the law to the dean of the National University.

At the present time, the licenses for dental practice are issued by the Ministry of Public Health with no interference or supervision by the University. The Faculty of Odontology was indirectly informed of the fact that on October 27, 1956, the dean of the University sent a letter to the Secretary of National Education with suggestions concerning the problems involved in the issuing of licenses for dental practice. In that letter, the dean emphasized that the Secretary of National Education should request the representation of groups of officials of dental societies. Law no. 3,134 was issued a few months after the date of that letter, but the needed representation of officials of dental societies was not considered.

On the basis of the facts stated, the dental faculty of the National University of Colombia respectfully requests the help of the Council of Directors of the University in procuring a review and a rectification of the aforementioned laws. These laws are in conflict with the fundamental principles of the University, harm the dental profession, lower the professional enthusiasm of the Faculty, and endanger the health of the people.

Facultad de Odontología, Universidad Nacional de Colombia, Bogotá, Colombia

Saliva clue

Brit.M.J. No. 5054:1184 Nov. 16, 1957

A test of saliva on the gum of an envelope flap to determine the blood group of an accused person was referred to in evidence recently. A motor dealer was charged at Birmingham, England, with demanding money with threats. He was alleged to have sent letters to two former business associates, demanding the money, and was committed on bail for trial at Birmingham Assizes. The saliva remaining in the gum of the flap on four of the envelopes was tested and found to be group A, the same as the blood group of the accused man. About 75 per cent of the population secrete blood group antigens in the saliva.

British Medical Association, Tavistock Square, London, W.C.1, England

Doctoral and Masters' dissertations

In this column each month are listed recent Doctoral and Masters' dissertations of dental interest, accepted by the dental schools or graduate schools in partial fulfillment for advanced degrees. Copies of many of these theses are available from the schools through interlibrary loan.

Modifications of the ground substance of the pulp in the aged (Modificazioni del contingente stromale nella polpa dentale dei senescenti). *Elio di Gioia*. 1955. SPEC.ODONT. School for Dental Specialties, Dental Institute, University of Bari, Italy.

Exogenous implants (Impianti alloplastici). *Enrico Colucci*. 1955. SPEC.ODONT. School for Dental Specialties, Dental Institute, University of Bari, Italy.

Difference in the excursion and in form of the condylar path in patients with a complete dentition and in edentulous patients (Differenze di escursione e di forma dei tragitti condiloidei tra individui a dentatura completa ed individui edentuli completi). *Gianni de Santis*. 1955. SPEC.ODONT. School for Dental Specialties, Dental Institute, University of Bari, Italy.

Modifications of the nerve structures in the pulp of the aged (Modificazioni del contingente nervoso nella polpa dentaria dei senescenti). *Giuseppe di Pierro*. 1955. SPEC.ODONT. School for Dental Specialties, Dental Institute, University of Bari, Italy.

New roentgenographic technic for the projection of the architectural pattern, the lamina dura and the alveolar crest, to be used in neurosurgery (Nuova tecnica radiologica per la proiezione ecatermica del foro ovale secondo l'asse neurochirurgico). *Giuseppe Fina*. 1955. SPEC.ODONT. School for Dental Specialties, Dental Institute, University of Bari, Italy.

Twenty-four hour periodicity in the mitotic activity and the infiltration of round cells into the epithelium of the interdental papillae in rats (Die vierundzwanzig Stunden Periodik der mitotischen Aktivität und der Rundzelleninfiltration im Epithel der Interdentalpapille der Ratte). *Stephan Hartl*. 1956. DR.MED.DENT. Dental Institute, University of Zurich, Switzerland.

Alterations in the rhythm of tooth mobility in persons with and without bruxism (Rhythmische Zahnbeweglichkeitsänderungen bei Knirschern und Nichtknirschern). 1956. *Hellmut Hirt*. DR. MED.DENT. Dental Institute, University of Zurich, Switzerland.

Old and new technics in the indirect inlay method (Alte und neue Wege der indirekten Inlaytechnik). *Ursula Schaper*. 1956. DR.MED.DENT. University of Göttingen, Germany.

Osteomyelitis of the facial bones, especially of the upper and lower jaw (Die Osteomyelitis der Gesichtsknochen unter besonderer Berücksichtigung von Ober- und Unterkiefer). *Günter Scholz*. 1956. DR.MED.DENT. University of Göttingen, Germany.

Microscopic studies on the strength and structure of dental amalgams (Über die Mikrohärtigkeit und Mikrostruktur von Dentalamalgamen). *Sigrid Hansen*. 1956. DR.MED.DENT. University of Göttingen, Germany.

Professional secrecy in dentistry (Über die ärztliche Schweigepflicht in der Zahnheilkunde). *Peter Schöning*. 1955. DR.MED.DENT. University of Munich, Germany.

Roentgenographic representation of cysts in the maxillary sinus (Die röntgenologische Darstellung von Zysten in der Kieferhöhle). *Gundula Zühlke*. 1956. DR.MED.DENT. University of Munich, Germany.

Tooth mobility after lengthening of the jaws by palatoplasty (Die Bewegungen der Zähne bei Kieferdehnung durch Gaumennaht-erweiterung). *Peter Self*. 1956. DR.MED.DENT. University of Munich, Germany.

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